



Use of Herbal Tea/Herbal Preparations for Children with Symptoms of Viral Upper Respiratory Infections

✉ Methiye MANCAK KARAKUŞ¹, ✉ Anıl TAPISIZ², ✉ Nazmi MUTLU KARAKAŞ³, ✉ Melis DENİZ², ✉ Ufuk KOCA ÇALIŞKAN^{1,4*}

¹Gazi University, Faculty of Pharmacy, Department of Pharmacognosy, Ankara, Türkiye

²Gazi University, Faculty of Medicine, Department of Pediatric Infectious Diseases, Ankara, Türkiye

³Gazi University, Faculty of Medicine, Department of Pediatrics, Ankara, Türkiye

⁴Düzce University, Faculty of Pharmacy, Department of Pharmacognosy, Düzce, Türkiye

ABSTRACT

Objectives: Respiratory tract infections (RTIs) are common in children. To treat the symptoms of simple health problems, individuals look for natural healing methods that can be easily prepared at home. The aim of this study was to determine the plants and herbal products used by the parents of children suffering from viral upper respiratory tract symptoms by questionnaire. In the study, applications and products, other than plants used by families for their children were also investigated.

Materials and Methods: This study is a cross-sectional survey conducted at Faculty of Medicine, Gazi University (Ankara, Türkiye). A questionnaire form was used by scanning the existing literature and reviewed with the patients face to face by the researchers. The data obtained from the study were analyzed with the Statistical Package for the Social Sciences (SPSS) statistical program.

Results: About half of the participants reported that they used non-chemical drug practices for their children with upper RTIs. The most common practice was to prepare herbal tea (30.5%), followed by mandarin/orange and/or their juice (26.9%) for oral application. The most used herbal tea for upper RTIs is with linden (*Tilia* sp.). Patients who used linden usually prepared it as tea, in other words by infusion, and served their children 1-2 cups/1-3 times a week. Except for herbal tea, the participants mostly used honey (19.0%) for their children's symptoms.

Conclusion: Where available, appropriate doses and dosage forms of herbal supplement products with scientifically proven efficacy and safety should be determined for the pediatric population. Parents should use these products based on the recommendations of their pediatrician.

Key words: Pediatric, symptoms, respiratory tract infection, herbal tea, cross-sectional survey

INTRODUCTION

Respiratory tract infections (RTIs) are one of the most common diseases in children. They mostly have a viral origin and disturb the larynx, throat, trachea, mouth, and nose. The most common symptoms are cough, fever, nasal congestion, runny nose, and sore throat.¹ RTIs can be frustrating for both children and their parents, affecting daily activities as well and respiratory symptoms.²

To treat the symptoms of simple health problems, individuals look for approaches that they can easily apply at home.³ These methods, which are included in complementary and alternative medicine (CAM) applications, are used in all age groups,

including children.⁴ Complementary and alternative medicinal practices, especially herbals are frequently used for managing symptoms of RTIs in children.^{5,6} Studies in pediatric patients showed that herbal remedies are often used to treat coughs and colds.^{7,8}

Although many plants are used for RTI symptoms, studies on the safe use of these plants in children are incomplete. There are ethical and moral limitations. Moreover, children have different physiology than adults and scientific data explaining the effectiveness of herbal products, their interaction with drugs and their side effects are lacking for all age groups.^{9,10}

*Correspondence: ukoca@gazi.edu.tr, Phone: +90 533 489 80 87, ORCID-ID: orcid.org/0000-0002-5216-7588

Received: 14.02.2022, Accepted: 16.04.2022

©Turk J Pharm Sci, Published by Galenos Publishing House.

The aim of this study was to determine the plant drugs and herbal products used by the families of children mostly suffering from viral upper respiratory tract symptoms. In this study, applications and products other than plants used by families for their children were also investigated. In this large-scale research, types of teas, preparation techniques of the teas, the herbs used in the teas, their preparation, the quantity and frequency of applications of those teas are examined.

MATERIALS AND METHODS

The research was conducted as a cross-sectional survey at the Department of Pediatric Infectious Disease in General Pediatrics at the Faculty of Medicine, Gazi University between July 1st 2020 and September 1st 2020. The approval was obtained for this study from the Ethics Committee at Gazi University (12.05.2020-E.54135). All the participants voluntarily participated in the study. The research was conducted with the families of the patients, who applied to the hospital with the symptoms of viral upper RTI. The questionnaire was prepared based on the relevant literature and applied to the patients with face-to-face by the researchers. Cough, rhinorrhea, nasal congestion, sore throat, and fever were determined as symptoms of upper RTI and their presence in children was questioned. In the first part of the questionnaire, the descriptive characteristics of the participants and their children were examined and 250 individuals were included in the study. Since the amount of the salary can change in numbers in our country, respondents were asked to categorize their family income as "very low", "low", "middle", "good" or "excellent". In the next sections, herbals and non-pharmacological applications used for upper respiratory tract symptoms are presented. In addition to questions with two options such as "yes" and "no," "multiple response" questions, where more than one option can be selected were also included. The preparation technique, frequency and amount of used herbal teas were also examined. Herbal tea preparation techniques were classified as infusion, decoction, and maceration. The infusion is defined as brewing with boiling water, decoction is adding cold water and boiling with it, and maceration is adding water, keeping it at room temperature by shaking occasionally.

Statistical analysis

The data obtained from the study were analyzed with the Statistical Package for the Social Sciences (SPSS) 26.0 statistical program. The frequency of participant responses is shown in the accompanying tables and figures. Cross tables were created to correlate the responses and chi-square tests were conducted. The level of significance for all statistical analyzes was accepted as $p < 0.05$.

RESULTS

Characteristics of participants and children

The characteristics of the participants and children are shown in detail in Table 1. A total of 250 individuals participated in this study, in which 72.0% were mothers, 25.2% were fathers, and

Table 1. Characteristics of participants and children (n: 250)

Characteristics	Number (n)	Percentage (%)
Child's gender		
Girl	130	52.0
Boy	120	48.0
Child's age		
0-2	58	23.2
3-6	70	28.0
7-11	59	23.6
12-17	63	25.2
*Child's symptoms		
Cough	162	25.8
Rhinorrhea	129	20.5
Nasal congestion	119	18.9
Fever	92	14.6
Sore throat	84	13.4
Other	43	6.8
Children having chronic diseases		
Yes	36	14.4
No	214	85.6
Children having a regular medication intake		
Yes	42	16.8
No	208	83.2
Participant's relationship to child		
Mother	180	72.0
Father	63	25.2
Other	7	2.8
Participant's age		
18-29	56	22.4
30-44	163	65.2
45-59	28	11.2
≥60	3	1.2
Participant's education		
Illiterate	6	2.4
Literate	4	1.6
Primary school graduate	33	13.2
Secondary school graduate	48	19.2
High school graduate	74	29.6
University graduate	73	29.2
Master's and PhD	12	4.8
Family income		
Very low	2	0.8
Low	15	6.0
Middle	161	64.4
Good	68	27.2
Excellent	4	1.6
Residence		
City center	163	65.2
District	83	33.2
Other	4	1.6

*Multiple response

2.8% were other individuals. Most individuals (65.2%) between the ages of 30 and 44 and more than half of the participants (65.2%) reside in the city center, moreover, about 65% of respondents described their family income as "middle". As for the education of the participants 29.6% of the participants are high school graduates, 29.2% are university graduates and 4.8% are postgraduate.

The participated children were mostly between the ages of 3 and 6 (28.0%), 52% of the children were girls and 48% were boys, who generally did not have chronic illnesses or did not take regular medications. The most common upper respiratory tract symptoms in children were cough (25.8%) followed by rhinorrhea (20.5%).

Use of non-pharmaceutical products

Non-drug applications and products used are given in Table 2 and symbolized in Figure 1. The number of participants who applied or did not apply anything other than medication for their child's upper RTI symptoms was close to. 47.2% of the participants reported that they used non-drug therapeutic approaches for their children with upper RTI symptoms. These applications were herbal tea, honey milk, vitamin supplements, mandarin/orange and/or their juice, and Vicks® rub, and steam application. The most common non-drug practice was to drink herbal tea (30.5%). The rate of use of herbal and/or herbal products, which was asked as a different question, was 34%. Participants reported that they mostly used honey (19.0%) for their children's symptoms, apart from herbal tea as a product. Differently, among the frequently used products were grape molasses (11.4%), vitamins (6.9%), carob molasses (5.9%), and fish oil (5.2%).

Use of herbal tea and products

The details about the application of herbal teas and products by the participants are given in Tables 3 and 4. Participants (34%) used herbal tea/product for their children's symptoms, used

them most often at the onset of diseases (61.2%). Herbal use declined after the disease progressed. Most participants did not use the prescribed medicine and herbal products together (89.6%).

Participants applied herbs mostly by brewing or boiling. The most used herbal hot drink was reported as linden infusion/decoction (44.2%) for upper RTI symptoms, followed by mint-lemon (28.6%) infusion/decoction. Individuals, who used linden for their children reported that they usually prepared it by infusion and they made their children drink 1 to 2 cups, usually 1 to 3 times a week. However, they prepared mint-lemon by decoction and made them drink 1-2 cups. The other reported herbs were sage, cinnamon-ginger, winter tea, chamomile, quince, fennel, rosehip, marshmallow, green tea, and pomegranate flower.

The data associated with herbal use and characteristic features of the children/participants are presented in Table 5. There was a statistically significant relationship between the age of the children and herbals use. Children between the ages of 7 and 11 highly consumed herbal teas ($p < 0.05$). However, herbal usage was low in children with chronic diseases and taking regular medication. Analysis showed that parents between 30 and 44 years old and mostly mothers used herbs/herbals for their children. Among those parents, there were university graduates had a middle-income and lived in the city center. However, the relationship between herbs usage and parents' gender, age, education, and income level was not statistically significant ($p > 0.05$). Participants who used herbs for themselves were more probably to use herbs for their children. Individuals who did not use herbs for themselves generally did not use herbs for their children (40.8%) either. The rate of the participants, who both themselves and their children used herbal medicine, was 31.2%.

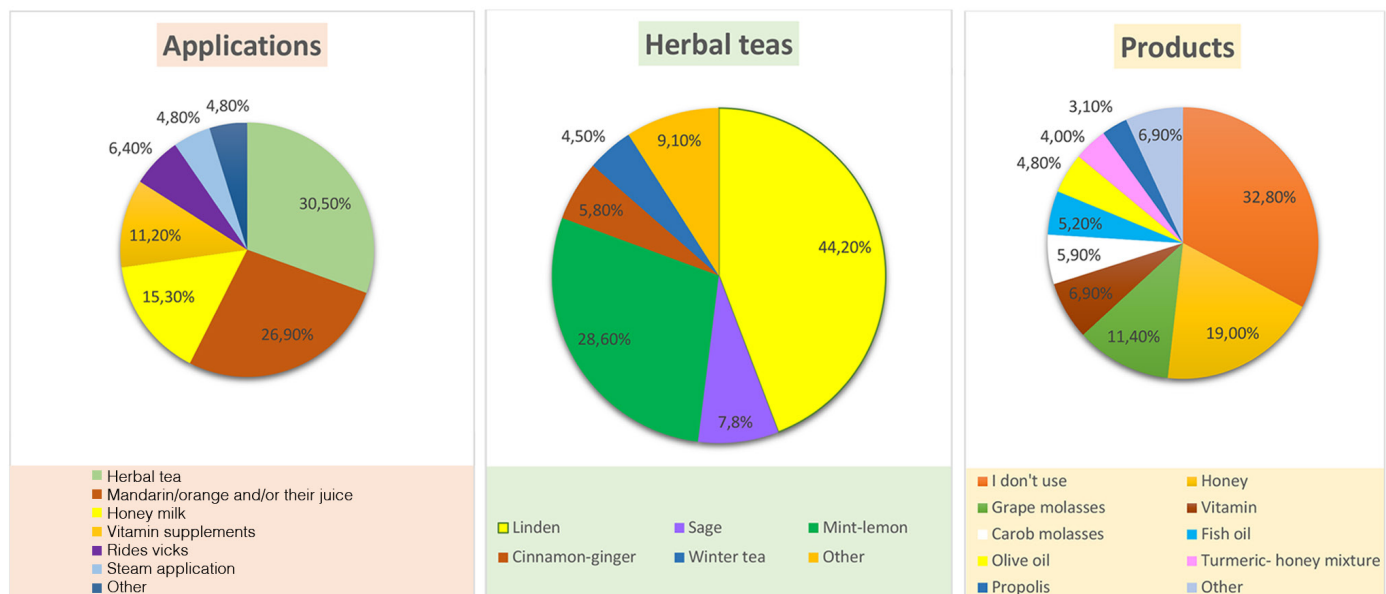


Figure 1. Use of non-pharmaceutical products

Participants reported that they learned the use of herbals mostly from relatives, family elders, neighbors, and friends (60.5%). The number of participants who received advice from health professionals was quite low (15.5%). For this reason, the rate of use of herbal products sold in pharmacies (Umca® and Sambucol®) was also very little (1.5%). Almost half of the individuals obtained the herbs from herbalists or spice shops. Apart from that, they were mostly obtained from village/hometown and market/supermarkets. The number of individuals

who bought the herbs from the pharmacy was quite low (5%). Individuals using herbals preferred them because they thought they were useful and less harmful than chemicals. About half of the participants who did not use herbals reported that they considered them ineffective (49%). Some of them described herbs as expensive (1.9%) and harmful (13.5%), additionally, 4.8% of the participants reported that their family doctor said they should not use herbal medicine because they were already taking medicine.

Table 2. Use of herbal and non-pharmaceutical products

	Number (n)	Percentage (%)
Before applying to the hospital for your child, did you apply anything other than medication for upper respiratory tract infection symptoms?		
Yes	118	47.2
No	132	52.8
*Before taking your child to the hospital, what applications did you use for upper respiratory tract infection symptoms other than medication?		
Herbal tea	76	30.5
Mandarin/orange and/or their juices	67	26.9
Honey milk	38	15.3
Vitamin supplements	28	11.2
Rides vicks	16	6.4
Steam application	12	4.8
Other	12	4.8
Do you use herbal tea/product for upper respiratory tract infection symptoms in your child?		
Yes	85	34.0
No	165	66.0
Linden (<i>Tilia</i> sp.)	68	44.2
Mint- lemon (<i>Mentha</i> sp.- <i>Citrus limonum</i>)	44	28.6
Sage (<i>Salvia</i> sp.)	12	7.8
Cinnamon- ginger (<i>Cinnamomum</i> sp.- <i>Zingiber officinalis</i>)	9	5.8
Winter tea	7	4.5
Chamomile (<i>Matricaria recutita</i>)	3	1.9
Quince (<i>Cydonia oblonga</i>)	3	1.9
Fennel (<i>Foeniculum</i> sp.)	2	1.3
Marshmallow (<i>Althaea</i> sp.)	1	0.6
*What products do you use for your child other than herbal tea?		
I do not use	138	32.8
Honey	80	19.0
Grape molasses	48	11.4
Vitamin	29	6.9
Carob molasses	25	5.9
Fish oil	22	5.2
Olive oil	20	4.8
Turmeric- honey mixture	17	4.0
Propolis	13	3.1
Black cumin oil	5	1.2
Mulberry molasses	4	1.0
Black radish- honey mixture	4	1.0
Umca® (<i>Pelargonium sidoides</i>)	4	1.0
Ginger- honey mixture	2	0.5
Sambucol® (<i>Sambucus nigra</i>)	2	0.5
Germ oil	1	0.2
Other	7	1.6

*Multiple response

DISCUSSION

The use of herbs and herbal products in pediatric populations has been studied mostly under the heading of CAM. Studies have focused more on determining for what kind of symptoms the CAM are used in the general pediatric population. In Italy, CAM is mostly used to treat ear, nose, and throat pathologies. The most used methods are phytotherapy and homeopathy.¹¹ In southwest England, 50% of the children had used complementary medicine who had upper RTIs.¹² As well as in the United States of America, CAM practices are also frequently used for respiratory diseases in children. More than 50% of users have been using vitamin supplements and over 40% have been using herbal treatments. *Aloe vera*, chamomile tea, echinacea, garlic, and ginger were among the most consumed herbs.¹³

Among the studies investigating herbal use in specific pediatric populations, studies in children having respiratory tract disorders are relatively few. In Australia, it has been reported that parents of children being affected by acute respiratory infections commonly use chest lotions/herbal liniments, lemon and honey-mixed drinks, only honey, and probiotics as treatments. However, herbals were used in children, less than these applications. Elderflower, echinacea, ginger, mint, turmeric, and herbal combinations were among the herbals used. Parent's educational status played a role in the use of CAM in children.¹⁴ In Türkiye, 77.2% of mothers who applied to the emergency department with respiratory system complaints in their children reported that they applied CAM to their children. The most common practice was the use of herbal products and the plants were as follows: linden (50.9%), mint-

Table 3. Herbal tea/product usage details

	Number (n)	Percentage (%)
*When do you use herbal tea/product for upper respiratory tract infection in your child?		
Before disease	20	16.5
When the disease started	74	61.2
When the disease progresses	8	6.6
After stopping the medicine	6	5.0
With the medicine	11	9.1
Other	2	1.7
Do you give your child any other medicines while using the herbal tea/product for upper respiratory tract infection?		
Yes	26	10.4
No	224	89.6
*From whom/where did you learn that you can use herbal tea/product for your child's upper respiratory tract infection?		
Relatives, family elders	54	38.0
Neighbor, friend	32	22.5
I have made up my own mind	18	12.7
Internet, television	14	9.9
Doctor	13	9.2
Pharmacist	6	4.2
Other healthcare professionals	3	2.1
Other	2	1.4
*Where do you buy the herbs, which you prepare the herbal tea?		
Herbalist, spice	58	47.9
Village/hometown	25	20.7
Market, supermarket	23	19.0
I picked the plant myself	6	5.0
Pharmacy	6	5.0
Internet, television	3	2.5
*Why do you use herbal tea/product?		
I think it is		
Useful	133	57.6
More harmless than chemical drugs	61	26.4
Easily accessible	24	10.4
Cheap	7	3.0
Other	6	2.6
Do you use a herbal tea/product for yourself when you feel sick?		
Yes	141	56.4
No	109	43.6

*Multiple response

lemon (40.8%), and carob (29.4%).¹⁵ In another study, conducted to determine the approaches of mothers to their children having cough, it was determined that 72.8% of mothers benefited from herbals such as linden and mint. The same study indicated that practices such as eating tangerine/orange fruits, drinking milk with honey, applying vics on all over the body were applied for healing.¹⁶ In Saudi children, the herbal medicine use rate for acute lower respiratory tract disease was 59.3%. Sesame oil, fenugreek, olive oil, and dates were also often used.¹⁷

Analysis of the results showed that children's families used various non-drug practices for their children with viral upper respiratory tract symptoms. It has been determined that the applications and products used by families for their children are easily accessible and applicable at home. The results obtained in this study are similar to the results of previous studies.^{15,16}

Previous studies have shown that female parents tend to use more CAM and herbs for their children; even, some studies were conducted with mothers only.^{11,15,16} Similarly, in this study, herbs were mostly used by mother, moreover, similar to previous studies, participants who used herbs were mostly university graduates.^{11,14} Although this suggested that the participants with a higher education level researched herbs more, additionally, the participants reported that they learned the information mostly from their family members. Participants residing in the city center used herbs more. Considering that the participants mostly obtained herbs from herbalists, this may have been due to their easier access to herbalists in the city center.

The survey results showed that honey is the most used product of all non-pharmacological therapeutic approaches. In addition to its use alone, honey has been used as a mixture by adding it to plants. Previous studies have also shown that honey is often used for respiratory problems in children, especially for cough. Due to its antibacterial, antimicrobial, and topical

soothing properties, honey has been suggested as a potential treatment for coughs and colds.¹⁸ A Cochrane review compared the effectiveness of honey for acute cough in children with the effectiveness of diphenhydramine, dextromethorphan, and salbutamol. Results showed that honey reduced the cough-time better than placebo and salbutamol. For cough symptoms, honey was approximately equally effective with dextromethorphan, while it was more effective than diphenhydramine, control, and placebo. There was no difference between honey and others in terms of adverse effects.¹⁹ However, honey is not recommended in children younger than 1 year old as it may cause infantile botulism.²⁰

Linden was the most applied herb for children's symptoms in our study. According to the European Medicines Agency (EMA), linden flowers can be used to relieve cold symptoms.²¹ Commission E approved the use of linden for cough and bronchitis. According to Physician Desk Reference (PDR), linden flowers can be used for colds of the respiratory tract due to their diaphoretic effect and for febrile colds and infectious diseases, where sweating treatment is required.²² However, the indications stated in the monographs are based on traditional use and are not supported by clinical studies. EMA recommends the preparation and use of tea from linden flowers as an infusion, while according to the PDR, it can be prepared both as an infusion and a decoction. Although it is reported in the monographs that linden has no serious side effects, EMA does not recommend the use of linden in children under 4 years of age due to insufficient data. In our study, it was found that the participants prepared linden by both infusion and decoction methods, mostly by infusion. Moreover, this study used linden in children under 4 years old, contrary to what is stated in EMA.

Table 4. Herbs and usage information

Herbs	Number of users for child				Preparation technique (n)			Frequency of use (n)				Amount of usage (n)			
	0-2 age	3-6 age	7-11 age	12-17 age	Infusion	Decoction	Maceration	Every day	Throughout the disease	1-3 per week	4-6 per week	1-2 cups a day	3 cups a day	4 or more cups a day	Other
Linden	13	21	21	13	50	18	0	11	26	28	3	64	1	0	3
Sage	2	4	0	6	10	2	0	1	6	5	0	12	0	0	0
Mint- lemon	6	15	12	11	16	28	0	5	15	22	2	39	4	0	1
Cinnamon- ginger	1	2	3	3	5	3	1	1	4	4	0	8	0	1	0
Winter tea	0	2	1	4	4	2	1	1	3	3	0	6	1	0	0
Chamomile	0	0	1	2	1	1	1	0	0	3	0	3	0	0	0
Marshmallow	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0
Quince	0	1	0	2	2	1	0	0	1	2	0	3	0	0	0
Fennel	1	0	0	1	2	0	0	1	1	0	0	1	0	0	1

n: Number

Table 5. Cross-table of herbal tea/product use

		Use of herbal tea/product		Significance <i>p</i> value
		Yes (%)	No (%)	
Child's age	0-2	5.6%	17.6%	<i>p</i> <0.05
	3-6	10.4%	17.6%	
	7-11	10.8%	12.8%	
	12-17	7.2%	18.0%	
Child's chronic disease	Yes	4.8%	9.6%	<i>p</i> >0.05
	No	29.2%	56.4%	
Child's regular medication intake of	Yes	4.8%	12.0%	<i>p</i> >0.05
	No	29.2%	54.0%	
Participant's relationship to child	Mother	25.6%	46.4%	<i>p</i> >0.05
	Father	7.2%	18.0%	
	Other	1.2%	1.6%	
Participant's age	18-29	6.8%	15.6%	<i>p</i> >0.05
	30-44	24.0%	41.2%	
	45-59	3.2%	8.0%	
	≥60	0.0%	1.2%	
Participant's education	Illiterate	0.4%	2.0%	<i>p</i> >0.05
	Literate	1.2%	0.4%	
	Primary school graduate	3.6%	9.6%	
	Secondary school graduate	5.2%	14.0%	
	High school graduate	9.6%	20.0%	
	University graduate	10.8%	18.4%	
	Postgraduate	3.2%	1.6%	
Family income	Too bad	0.4%	0.4%	<i>p</i> >0.05
	Bad	2.8%	3.2%	
	Middle	20.8%	43.6%	
	Good	10.0%	17.2%	
	Excellent	0.0%	1.6%	
Family residence	City center	24.0%	41.2%	<i>p</i> >0.05
	District	10.0%	23.2%	
	Other	0.0%	1.6%	
Herbal tea/product use for the participant's own	Yes	31.2%	25.2%	<i>p</i> =0.00
	No	2.8%	40.8%	

Individuals stated that they mostly used herbal teas or products for their children at the onset of illness. Herbal use declined after the disease progressed. This shows that parents turn to herbs as a first and simple remedy, when their child starts showing symptoms. When the disease progresses, they prefer using the drugs that their doctors prescribe. Generally, they do not prefer to use the prescribed drug and the herbs together. The age of the child and the use of herbs by the families themselves were effective in the use of herbs in children. Participants who used herbs generally used them because they thought they were beneficial, while those who did not use them generally thought they were ineffective.

Study limitations

This study was planned and the permissions were obtained before the pandemic but conducted during the Coronavirus disease-2019 (COVID-19) pandemic conditions. Therefore, the number of participants was limited to 250 due to the closures of the clinics from time to time. Moreover, the variation of

participants was mostly from the city, since not many parents made to the city hospital due to the pandemics. Since the study was conducted during the first 6 months of the pandemic, parents' habits might be the same as before pandemics through their children.

CONCLUSION

This study is valuable for public health and clinicians in terms of presenting the data on herbal use applied to children in detail at a university hospital. Most of the parents unconsciously used CAM for their children with the information they learned from relatives, family elders, neighbors, and friends. They did not have enough information about the preparation technique of the herbs, the frequency, duration, and amount of use. As a conclusion, appropriate doses and dosage forms of herbal supplement products with scientifically proven efficacy and safety should be determined for the pediatric population. Parents should be informed about herbs that can be used in

the pediatric population. Due to the pandemic, parents might have turned to natural resources as there is no proven specific treatment for COVID-19 or *vice versa*. However, they might have hesitated to use herbs/herbal products because there is not enough information about the COVID-19 and effects on children. Further questionnaires/studies should be applied to examine the change in parent's behaviors on herbal usage of their children. Parents should use these products under the supervision of their pediatrician with phytotherapy or natural medicine knowledge, moreover might be consultants of pharmacists.

Ethics

Ethics Committee Approval: The approval was obtained for this study from the Ethics Committee at Gazi University (12.05.2020-E.54135).

Informed Consent: All the participants voluntarily participated in the study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: M.M.K., A.T., N.M.K., M.D., U.K.C., Design: M.M.K., A.T., N.M.K., M.D., U.K.C., Data Collection or Processing: M.M.K., A.T., N.M.K., M.D., U.K.C., Analysis or Interpretation: M.M.K., U.K.C., Literature Search: M.M.K., U.K.C., Writing: M.M.K., A.T., N.M.K., M.D., U.K.C.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

REFERENCES

- Grief SN. Upper respiratory infections. *Prim Care*. 2013;40:757-770.
- Schot MJC, Dekker ARJ, van Werkhoven CH, van der Velden AW, Cals JW, Broekhuizen BDL, Hopstaken RM, de Wit NJ, Verheij TJM. Burden of disease in children with respiratory tract infections in primary care: diary-based cohort study. *Fam Pract*. 2019;36:723-729.
- Parisius LM, Stock-Schröder B, Berger S, Hermann K, Joos S. Use of home remedies: a cross-sectional survey of patients in Germany. *BMC Fam Pract*. 2014;15:116.
- Barnes PM, Bloom B, Nahin RL. Complementary and alternative medicine use among adults and children; United States, 2007. *National Health Statistics Reports*. 2008;12. Available from: <https://www.cdc.gov/nchs/data/nhsr/nhsr012.pdf>
- Lucas S, Leach M, Kumar S. Complementary and alternative medicine utilisation for the management of acute respiratory tract infection in children: a systematic review. *Complement Ther Med*. 2018;37:158-166.
- Lim A, Cranswick N, Skull S, South M. Survey of complementary and alternative medicine use at a tertiary children's hospital. *J Paediatr Child Health*. 2005;41:424-427.
- Du Y, Wolf IK, Zhuang W, Bodemann S, Knöss W, Knopf H. Use of herbal medicinal products among children and adolescents in Germany. *BMC Complement Altern Med*. 2014;14:218.
- Gürol A, Şener Taplak A, Polat S. Herbal supplement products used by mothers to cope with the common health problems in childhood. *Complement Ther Med*. 2019;47:102214.
- Di Lorenzo C, Ceschi A, Kupferschmidt H, Lüde S, De Souza Nascimento E, Dos Santos A, Colombo F, Frigerio G, Nørby K, Plumb J, Finglas P, Restani P. Adverse effects of plant food supplements and botanical preparations: a systematic review with critical evaluation of causality. *Br J Clin Pharmacol*. 2015;79:578-592.
- Sucaklı MH, Ölmez S, Keten HS, Yenicesu C, Sarı N, Çelik M. Evaluation of the usage of herbal products among university students. *Med Science*. 2014;3:1352-1360.
- Stampini V, Bortoluzzi S, Allara E, Amadori R, Surico D, Prodam F, Barone-Adesi F, Faggiano F. The use of complementary and alternative medicine (CAM) among Italian children: a cross-sectional survey. *Complement Ther Med*. 2019;47:102184.
- Simpson N, Roman K. Complementary medicine use in children: extent and reasons. A population-based study. *Br J Gen Pract*. 2001;51:914-916.
- Ottolini MC, Hamburger EK, Loprieato JO, Coleman RH, Sachs HC, Madden R, Brasseux C. Complementary and alternative medicine use among children in the Washington, DC area. *Ambul Pediatr*. 2001;1:122-125.
- Lucas S, Kumar DS, Leach DMJ, Phillips DAC. Complementary and alternative medicine use in Australian children with acute respiratory tract infection - a cross-sectional survey of parents. *Complement Ther Clin Pract*. 2020;39:101171.
- Kurt F, Güvenir H, Asarkaya M, Buğa H, Yakut Hİ, Mısırlıoğlu ED. Evaluation of the use of complementary and alternative medicine in children with complaints of respiratory system in the emergency department. *Turk J Pediatr Dis*. 2019;13:341-347.
- Büyük ET, Güdek E, Kalaycı N. Mothers' approaches to children with cough. *GUJHS*. 2014;3:1019-1031.
- Alharbi NS, Alenizi AS, Al-Olayan AM, Alobaidi NA, Algrainy AM, Bahadhailah AO, Alhunayni AA, Alqurashi HD, Alrohaimi YA. Herbs use in Saudi children with acute respiratory illnesses. *Sudan J Paediatr*. 2018;18:20-24.
- Kumar R, Lorenc A, Robinson N, Blair M. Parents' and primary healthcare practitioners' perspectives on the safety of honey and other traditional paediatric healthcare approaches. *Child Care Health Dev*. 2011;37:734-743.
- Oduwale O, Udoh EE, Oyo-Ita A, Meremikwu MM. Honey for acute cough in children. *Cochrane Database of Systematic Reviews*, 2018. Available from: <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD007094.pub5/epdf/full>
- Goldman RD. Honey for treatment of cough in children. *Can Fam Physician*. 2014;60:1107-1008, 1110.
- EMA, European Medicines Agency. Community herbal monograph on *Tilia cordata* Miller, *Tilia platyphyllos* Scop., *Tilia x vulgaris* Heyne or their mixtures, flos. Available from: https://www.ema.europa.eu/en/documents/herbal-monograph/final-community-herbal-monograph-tilia-cordata-miller-tilia-platyphyllos-scop-tilia-x-vulgaris-heyne_en.pdf
- Physician Desk Reference (PDR) for Herbal Medicines. Linden. *Tilia* species. 2000.