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REVIEW ARTICLE / DERLEME MAKALE

TRADITIONAL USAGES OF SOME MEDICINAL PLANTS FOR PEDIATRIC DISEASES

ÇOCUK HASTALIKLARINDA GELENEKSEL OLARAK KULLANILAN BAZI BİTKİLER

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ABSTRACT

Objective: *Different types of pediatric diseases negatively affect the lives of many people, physically. Here, we aimed to document some medicinal plants used as traditional folk medicine in pediatrics treatment.*
Result and Discussion: *117 taxa and 53 families have been identified as traditional herbal medicines used in defined pediatric diseases. The most frequently used medicinal plant species according to the number of citations Foeniculum vulgare Mill., Juglans regia L., Dryopteris filix-mas (L.) Schott, Rosa canina L., Mentha x piperita L., Matricaria chamomilla L. All findings are expected to form the basis for new pharmaceutical products and become a handbook for healthcare professionals.*
Keywords: *Ethnobotany, medicinal plants, pediatric diseases, traditional medicine, Turkey*

ÖZ

Amaç: *Çocuk hastalıklarının farklı türleri birçok insanın yaşamını fiziksel olarak olumsuz etkilemektedir. Burada geleneksel halk hekimliği olarak pediatri tedavisinde kullanılan bazı şifalı bitkileri belgelemeyi amaçladık.*
Sonuç ve Tartışma: *Tanımlanmış çocuk hastalıklarında kullanılan geleneksel bitkisel ilaçlar olarak 117 takson ve 53 familya tespit edilmiştir. Atıf sayılarına göre en sık kullanılan tıbbi bitki türleri Foeniculum vulgare Mill., Juglans regia L., Dryopteris filix-mas (L.) Schott, Rosa canina L., Mentha x piperita L., Matricaria chamomilla L. Tüm bulguların yeni farmasötik ürünler için temel oluşturması ve sağlık profesyonelleri için bir el kitabı olması bekleniyor.*
Anahtar Kelimeler: *Çocuk hastalıkları, etnobotanik, geleneksel tıp, tıbbi bitkiler, Türkiye*

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INTRODUCTION

Usage of plants for treatment begins with history of humanity. Thousands of years ago, humans had found out power of plants for treatment and have derived benefit from it to sustain healthy way of living. Today, the method of using plants is still an important way in the treatment of various diseases. The records of the information about these plants are made with ethnobotanical studies. Medicinal plant lore or herbal medicine is a major component of traditional medicine [1]. The use of medicinal plants can be considered an important element in the maintenance of local knowledge and culture. This practice also represents an affordable therapeutic option, in communities where poverty and a lack of access to modern medicine are prominent factors. Just like other medicines, medicinal plants may have side effects however, and administration to children should be performed with careful attention.

Globally, childhood diseases represent a significant health problem and remain a significant health burden [2]. 12 million children under the age of 5 die each year in developing countries and that approximately 70% of deaths are due to communicable diseases and malnutrition. More than 5 million children died in 2020 before reaching their fifth birthday. Nearly half of these deaths, 2.4 million of them, occurred among newborns. According to the report, more than 50 countries will not be able to reach 2030, a country that cannot reach, and 60 newborn deaths will not occur [2-4].

Throughout human history medicinal plants have been used in health recovery, and have evolved from simple household preparations to complex artificial forms [5]. Despite the growing development of public health policies around the globe, data from the World Health Organization [6] estimates that between 1.3 and 2.1 billion people live without access to essential medicines, and that in many developing countries traditional medicine represents a key option for primary care for 70 to 95% of the population [7,8].

Childhood diseases represent a sizeable proportion of mortality burden that could potentially be alleviated when effectively managed. Information regarding plants used for childhood diseases were obtained from different scientific databases and ethnobotanical books. African countries come first among the countries where these diseases are most common. In Africa, it is estimated that about 75% of the commonly occurring diseases such as pneumonia, diarrhoea, malaria, measles and otitis media affect children [2-4]. This has a severe effect on the quality of life for the children and the future of Africa [9]. Infant mortality is on the rise due to inadequate healthcare services and restricted access to basic needs such as clean and safe water, particularly in rural areas. The inequality between rural and urban districts have also widened over-time [10] leaving many people in remote areas to resort to traditional health practitioners (THPs) and medicinal plants as alternative to orthodox medicine. Approximately 80% of the global population, particularly those of rural settlements, depend on medicinal plants in various forms as medicines for the maintenance of their health [11]. In the Western countries with highly developed health care systems, phytotherapy is considered as a part of complementary and Alternative Medicine (CAM) and it has significantly increased in recent years [12]. Globally, the use of medicinal plants for childcare and general well-being has long been recognized. Ethnobotanical surveys have been reported in countries such as Romania [34] and Brazil [8]. Generally, ethnobotanical surveys are one of the primary steps in the identification and development of drugs from medicinal plants [13,14]. However, there are limited studies reporting on medicinal plants used for treating child- hood diseases when compared to the other diseases [15].

According to the report prepared by IGME, given current trends, 60 million children will die before the age of five between 2017 and 2030, and half of these children will be newborns. The majority of newborn deaths occurred in two regions: South Asia (39 percent) and sub-Saharan Africa (38 percent). Half of newborn deaths occurred in five countries: India (24 percent), Pakistan (10 percent), Nigeria (9 percent), the Democratic Republic of the Congo (4 percent) and Ethiopia (3 percent). Pneumonia and diarrhea are among the leading infectious diseases that cause death in children under the age of five, globally. In these deaths, the rate of pneumonia is 16 percent and diarrhea is 8 percent. Premature birth, pregnancy, childbirth, and postpartum complications accounted for 30 percent of neonatal deaths in 2016. In addition to 5.6 million under-5 deaths, 2.6 million babies are stillborn each year, the majority of which are preventable [16]. The aim of our study is to define some medicinal plants traditionally used for the treatment of pediatric diesases in Earth. A literature search was conducted on

medicinal plants used for pediatric in Eart by referencing studies published in journals, reports and books from 1903 to 2022. Detailed information about taxa such as botanical, family and local names, used parts, preparation methods and ailments treated/therapeutic effects were given in Table 1. Based on the data, the most frequently used plant families and taxa for each stated disease are presented in charts. The scientific names of plants and plant families were verified using The International Plant Names Index.

RESULT AND DISCUSSION

In this research, a total of 117 taxa belonging and 53 families were determined as being traditionally used for pediatric diseases on Earth. These medicinal plants are arranged in alphabetical order of their taxa and presented in Table 1 with the relevant information. Studies have shown that plants used for therapeutic purposes among the public in pediatric diseases are mostly used for skin diseases (22 taxa), nutritional regulation (21 taxa) and Diarrhea (20 taxa), respectively. Digestive system diseaese (18 taxa), Jaundice (11 taxa), Abdominal pain (11 taxa), Enuresis (9 taxa), Cough (8 taxa) follow this order (Figure 1). The first plant families with the highest number of plants were found as Apiaceae, Rosaceae, Asteraceae, Lamiaceae, Juglandaceae, Dryopteridaceae (Figure 2).

People uses from various plant parts such as L, F, Aer, Fl, Ro, Br, B, S and stem. It was found that the leaves are the most commonly used part of the plant (25%), for the treatment of pediatric diseases. Aer are the second most commonly used part of the plant, accounting for 18%. As a result of review, different forms of preparation like Inf (39%), Dec (23%), Cr (%16), no data (%58) any were detected. These preparations are applied more Ext (53%) than Int (47%) (Figures 3-5).

Table 1. Plants traditionally used in pediatric diseases

Botanical name	Family Name	Local Names	Used Parts	Preparation / Administration	Ailments treated	Reported Literature Uses
Areca catechu L.	Malvaceae	Cateşu	Aer	-/-	Ear pain	80
Artemisia absinthium L.	Asteraceae	Pelinotu	Aer	Int	Nutritional	80
Achillea biebersteinii Afan.	Asteraceae	Bovijan	Aer	Inf	Anxiety disorder	81
Achillea millefolium L.	Asteraceae	Civanperçemi	L	-/-	Abdominal Pain	82
Allium porrum L.	Amaryllidaceae	Pırasa	Stem	Cr	Toothache	83
Allium sativum L.	Amaryllidaceae	Sarımsak	Aer	İncense, -/-	Evil Eye, Flatulence	83,80
Allium cepa L.	Amaryllidaceae	Soğan	Aer	-/-	Digestive system	80
Ananas comosus (L.) Merr.	Bromeliaceae	Ananas	Aer	-/-	sprue	80
Anethum graveolens L.	Apiaceae	Mazı, Dere Otu	Br, L, F	Inf, Int	Digestive system Abdominal Pain	83 84
Anthemis cotula L.	Asteraceae	Papatya	Fl	-/-	Chıldren's Hearts	84
Anthemis chia L.	Asteraceae	Papatya	Fl	Inf	Antipyretic	85
Anthemis tinctoria L.	Asteraceae	Papatya	Fl	Dec	Abdominal pain	1
Arnica montana L.	Asteraceae	Arnica	L	-/-	Anxiety disorder, Trauma	54,55
Artemisia absinthium L.	Asteraceae	Pelinotu	L	Cr	Epilepsy, Athrepsia	57,58,54,55
Artemisia scoparia Waldst. Kitam	Solanaceae	Malang	L, F	-/-	Jaundice, Poisoning	86,87
Astragalus adscendens Boiss. Hausskn	Fabaceae	Geven	Ro	-/-	Bloating	88
Aristolochia bodamae Dingler	Aristolochiaceae	Kaynana Kokusu	Ro	Inf	Enuresis	89
Bellis perennis L .	Asteraceae	Papatya	Fl	Dec	Stomachache	85
Berberis vulgaris L.	Berberidaceae	Berberis	F	-/-	Jaundice	90

Table 1 (*continue*). Plants traditionally used in pediatric diseases

Botanical name	Family Name	Local Names	Used Parts	Preparation / Administration	Ailments treated	Reported Literature Uses
Betula pendula Roth	Betulaceae	Huş	Aer	Dec	Nutritional, Athrepsia	78,54
Brassica oleracea L.	Brassicaceae	Hardal	L	-/-	Wounds, İmpetigo, Measles	57, 55
Calendula officinalis L.	Asteraceae	Aynısefa	Fl	-/-	Insomnia	54
Carica papaya L.	Caricaceae	Papaya	Tree	-/-	Digestive system	80
Cannabis sativa L.	Cannabaceae	Kenevir	S	-/-	Infection, İmpetigo	58
Carum carvi L.	Apiaceae	Kimyon	S	-/-	Flatulence, Cramps, Colic, Diarrhea	57,58
Citrus limon (L.)	Rutaceae	Limon	Pericarp	Ext	Diarrhea	90
Centella asiatica (L.) Urb.	Apiaceae	Kleinkattekruid [A]	L	Paste	Diarrhea , Ear pain	92
Cotoneaster persicus	Rosaceae	Cotoneaster	F	-/-	Jaundice	94.
Cocos nucifera L.	Areaceae	Hindistan Cevizi	Tree	-/-	Flatulence, Sore throat	80
Curcuma longa L.	Zingiberaceae	Zerdeçal	Ro	-/-	Diarrhea	80
Cupressus sempervirens	Cupressaceae	Selvi	Cone	Cr	Enuresis	96
Chenopodium album L.	Chenopodiaceae	Imbikicane	L	Boi	Vitamin C and Iron deficiency	97
Chelidonium majus L.	Papaveraceae	Kırlangıç Otu	Ro	-/-	General pain	54
Cichorium intybus L.	Asteraceae	Beyaz Hindiba	Ro	-/-	Epilepsy	55
Conium maculatum L.	Apiaceae	Baldıran	L	-/-	Paralysis, Skin diseases	54
Cornus mas L.	Cornaceae	Kızılcık	F	-/-	Diarrhea, Agitation, Fever, Nutritional	57,54,55,98,58
Corylus avellana L.	Betulaceae	Fındık	L	-/-	Nutritional	54,58
Cucurbita pepo L.	Cucurbitaceae	Balkabağı	Pulp	-/-	Endocrin diseases, Metabolic, Nutritional	54
Cupressus sempervirens L	Cupressaceae	Selvi	Cones	Dec	Tonic	85
Cynodon dactylon (L.) Pers.	Poaceaea	Ayrık Otu	Ro	-/-	Jaundice	99
Cydonia oblonga Mill.	Rosaceae	Ayva	L	Dec	İnfluenza, Cold	1
Cyperus longus L.	Cyperaceae	Şanfır	Aer	Cr	Digestive system, Toothache	100
Cymbopogon citratus (DC) Stapf.	Poaceaea	Limon Otu	Aer	-/-	Cough	102
Daucus carota L.	Apiaceae	Havuç	Ro	Cr	Musculoskeletal, Digestive system, Wounnds, İmpetigo	57,54, 55
Dryopteris filix- mas (L.) Schott	Dryopteridaceae	Erkek Eğrelti Otu	Rhizome	Ext	Digestive system, Wounnds, Epilepsy, Endocrin diseases, İnsomnia, Musculoskeletal, Blood and Lymph Diseases, Nutritional, Metabolic	57,54
Equisetum arvense L.	Equisetaceae	Kırkkilit	Aer	-/-, Inf	Diarrhea, Abdominal pain, Enuresis	54,92,105
Euphorbia seguieriana Neck.	Euphorbiaceae	Sütleğen	La	Int	Malaria	106
Ficus carica L.	Moraceae	İncir	F	Dec	Blood and Lymph Diseases	54
Ferula assa-foetida L.	Apiaceae	İncir	Aer	-/-	Constipation	107
Foeniculum vulgare Mill.	Apiaceae	Rezene	F	Inf	Cramps	57,54,55
Foeniculum vulgare Mill.	Apiaceae	Rezene	F	Inf	Flatulence	57,54,55

Table 1 (*continue*). Plants traditionally used in pediatric diseases

Botanical name	Family Name	Local Names	Used Parts	Preparation / Administration	Ailments treated	Reported Literature Uses
Foeniculum vulgare Mill.	Apiaceae	Rezene	S	Inf	Colic	93,11,23
Foeniculum vulgare Mill.	Apiaceae	Rezene	S	Inf	Laxative, Swollen stomach, Swollen stomach, Cold Digestive system, Cough, Stress removal, Diarrhea, Antifungal activity, İndigestion, Abdominal pain, Digestive system	93,95,108,109, 110
Hibiscus rosa-sinensis L.	Malvaceae	Ebegümeci	Fl	-/-	Fever	80
Hordeum murinum L. subsp. Glaucum	Poaceaea	Tilki Kuyruğu	Aer	Inf	Urinary Tract İnfections	111
Humulus lupulus L.	Cannabaceae	Şerbetçi Otu	Fl	Ext	Infections, Wounds, Nutritional, Nutritional	57,54,55
Hypericum perforatum L.	Hypericaceae	Sarı Kantaron	Aer	Inf	Hiperactiviticy disorder	110
Juglans regia L.	Juglandaceae	Ceviz	S	Int	Skin diseases, Atopic dermatit, Nutritional, Diarrhea, Eczema, Wounds, Infections, Vomiting, Intestinal pain, Digestive system, Blood and Lymph Diseases	78,54,55,57
Lamium purpureum L. var. purpureum	Lamiaceae	Arıotu	Fl	Int	Children aspirate its nectar	112,113
Ligustrum vulgare L.	Oleaceae	Kurtbağrı	B	Ext	Scabies	54
Linum usitatissimum L.	Linaceae	Keten	S	Dec	Retained placenta	114
Malus sylvestris L.	Rosaceae	Elma	L,Fl	-/-	Enuresis, Respriatory diseases, Diphtheric tonsillitis, Impetigo	112,113, 54,55
Mamordica charantia L.	Cucurbitaceae	Kudret Narı	Aer	-/-	Swelling	80
Manihot utilissima Pohl.	Euphorbiaceae	Manihot	Aer	-/-	Flatulence	80
Manihot esculenta Crantz.	Euphorbiaceae	Manihot	Aer	Int	Diarrhea	115
Matricaria chamomilla L.	Asteraceae	Tıbbi Papatya	Fl	Int, Ext	Abdominal Pain, Cramps, Digestive system, Wounds, Impetigo, General pain, Cough, Epilepsy	54,55,78,57
Matricaria aurea [Loefl.] Sch.Bip.	Asteraceae	Beybunıc	Fl	Ext	Throat and Back pains	116
Melissa officinalis L.	Lamiaceae	Melisa	L	Dec	Epilepsy	55
Mentha x piperita L.	Lamiaceae	Nane	L	Dec, Inf, Ext, Int	Antispasmodic, Cold, Flu, Diarrhea, Cramps, Wounds, Impetigo	117, 57,54,55,70,71
Morus nigra L.	Moraceae	Dut	F	Boi	Respriatory diseases	54, 55
Myrtus communis L. subsp. communis	Rosaceae	Mersin	L	Inf	Skin redness in children	118
Nasturtium officinale R.Br.	Tropaeolaceae	Su Teresi	Aer	-/-	Jaundice	134
Nigella sativa L.	Apiaceae	Çörek Otu	S	-/-	Seizure	88
Ocimum basilicum L.	Apiaceae	Fesleğen	L	-/-	Diarrhea	148
Olea europaea L.	Oleaceae	Zeytin	O	-/-	Tyroid failure	135
Oryza sativa L.	Poaceaea	Pirinç	S	Inf	Boils, Smallpox	80

Table 1 (*continue*). Plants traditionally used in pediatric diseases

Botanical name	Family Name	Local Names	Used Parts	Preparation / Administration	Ailments treated	Reported Literature Uses
Paliurus spina-cristi L.	Rhamnaceae	Karaçalı	F/S	-/-,Int	Cough, Evil eye	18,29,69,134
Papaver somniferum L.	Papaveraceae	Gelincik	Wh	Int, Cr	Colic, Digestive system, General pain, Cough, Insomnia	57,78,54,133
Papaver rhoeas L.	Papaveraceae	Boynuzlu Gelincik	Aer	-/-	Red spots on body	134
Piper ningrum L.	Piperaceae	Karabiber	Aer	-/-	Catch a cold	80
Piper betle L.	Piperaceae	Biber	F	Dec	Ear infections	80
Pimpinella anisum L.	Apiaceae	Anason	F	Dec, -/-	Cramps, Abdominal pain	78,54,1
Pinus sylvestris L.	Pinaceae	Sarıçam	L	-/-	Musculoskeletal	54
Pistacia atlatica Desf.	Anacardiaceae	Atlantik Fıstığı	F	-/-	Jaundice	86
Plantago major L.	Plantaginaceae	Sinir Otu	L	-/-	Respriatory diseases, Cough, Urological diseases, Digestive system, Nutritional, Musculoskeletal	54,55
Polypodium vulgare L.	Polypodiaceae	Feriguita	Rhizome	Inf	Digestive system	54
Populus alba L.	Salicaceae	Kavak	Stem	Inf	Nutritional, Bone Development	54
Populus nigra L.	Salicaceae	Kavak	Stem	Cr	Nutritional	54
Portulaca oleracea L.	Portulacaceae	Porpine	Aer	Dec	Iron deficiency, Child development	131
Prunus persica (L.) Batsch.	Rosaceae	Şeftali	L	-/-	Alergy	130
Prunus spinosa L.	Rosaceae	Çakal Eriği	F	-/-	Cough, Dysentery, Diarrhea	55
Pulmonnaria officinalis L.	Boraginaceae	Çakal Eriği	Fl	-/-	Nutritional	54,55
Punica granatum L.	Punicaceae	Nar	F	-/-	Diarrhea, Digestive system	80
Pyrus communis L.	Rosaceae	Armut	L	-/-	Athrepsia, Cashexia, Diarrhea	57,58
Quercus robur L.	Fabaceae	Armut	Co	-/-	Diarrhea	57,58
Ricinus communis Linn.	Euphorbiaceae	Hint Yağı	Aer F	Inf	Nutritional, Fever	80
Rosa canina L.	Rosaceae	Kuşburnu	F	Inf	Diarrhea, Constipation, Abdominal pain, Cold, Endocrin diseases, Cachexia, Colic, Lack of appetite	54 55,123,124
Rumex dentatus L.	Polygonaceae	Kıvırtak	L	-/-	Nutritional	125
Ruscus aculeatus L.	Liliaceae	Tavşan Memesi	F	-/-	Enuresis	80
Ruscus aculeatus L. var. *aculeatus*	Liliaceae	Enir	F	Ea	Enuresis	85
Salix alba L.	Salicaceae	Söğüt	L	-/-	Epilepsy, Fright	55,126
Salvia officinalis L	Lamiaceae	Adaçayı	L	-/-	Nutritional, Respriatory diseases	54 55
Sambucus ebulus L.	Adoxaceae	Lor	L	Dec, Ext, Int	Nutritional, Cramps, Parasites, Enuresis	58,54
Sambucus nigra L.	Adoxaceae	Yigidinotu	L	Int, -/-	Rash in children, Enuresis	112,113,128
Sanguisorba officinalis L.	Rosaceae	Çayırdüğmesi	Aer	-/-	Diarrhea, Dysentery, Colic, Nutritional	54
Satureja hortensis L.	Lamiaceae	Tavuk Otu,	Aer	Inf	Appetizing	128

Table 1 (*continue*). Plants traditionally used in pediatric diseases

Botanical name	Family Name	Local Names	Used Parts	Preparation / Administration	Ailments treated	Reported Literature Uses
Scutellaria orientalis L. subsp. *virens* (Boiss. Kotschy.) Edmondson	Lamiaceae	Kesel Mahmut	Aer	-/-	Digestive system	128
Scoparia dulcis L.	Scrophulariaceae	Chini Gura	L	-/-	Diarrhea, Dysentery	129
Solanum nigrum L.	Solanaceae	İt Üzümü	Aer	-/-	Cough	88
Tamarindus indica L.	Fagaceae	Tamarind	Tr	-/-	Sore throat, Fever	80
Teucrium polium L.	Lamiaceae	Kefen Otu	Br/ Aer	Inf/ Dec	Enuresis, Diabetes	120,118
Tilia platyphyllos Scop.	Tiliaceae	Ihlamur	Fl	Dec, Boi	Cold, Influenza	1
Torilis arvensis [Huds.] Link.	Apiaceae	Şeytan Havucu	Aer	-/-	Abdominal pain	118
Trifolium arvense L.	Fabaceae	Yonca	Aer	-/-, Cr	Insomnia, Irritability	54
Triticum aestivum L.	Poaceaea	Buğday	S	Inf	Abdominal pain	119
Thymus vulgaris L.	Lamiaceae	Kekik	L	-/-	Digestive system	54.
Valeriana officinalis L.	Caprifoliaceae	Kedi Otu	Ro	-/-	Diarrhea, Endocrin diseases, Insomnia, Skin diseases	57,55
Verbena officinalis L.	Verbenaceae	Verbina	Aer	-/-	Nutritional, Digestive system, Skin diseases	55
Vitis vinifera L.	Vitaceae	Üzüm	F	-/-	Fever	120
Zea mays L.	Poaceaea	Mısır	F	Inf, Ext	Skin diseases, Scabies, Impetigo	55
Ziziphus jujuba L.	Amaranthaceae	Hünnap	L	Ext	Jaundice, Roupe	86
Ziziphus mauritiana Lam.	Rhamnaceae	Hünnap	L	Cr	Retained placenta	122

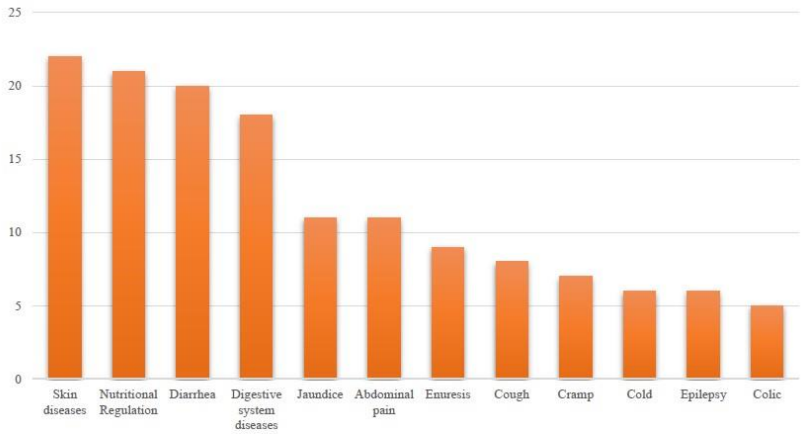

Figure 1. Most common diseases in pediatrics

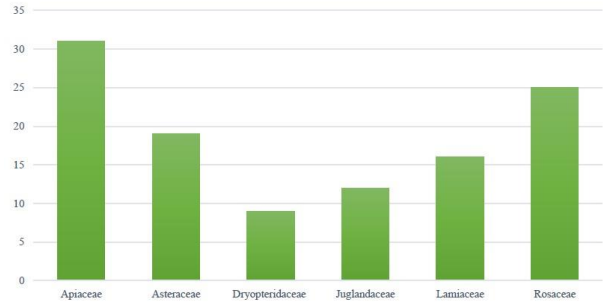

Figure 2. Most common used families in pediatric diseases

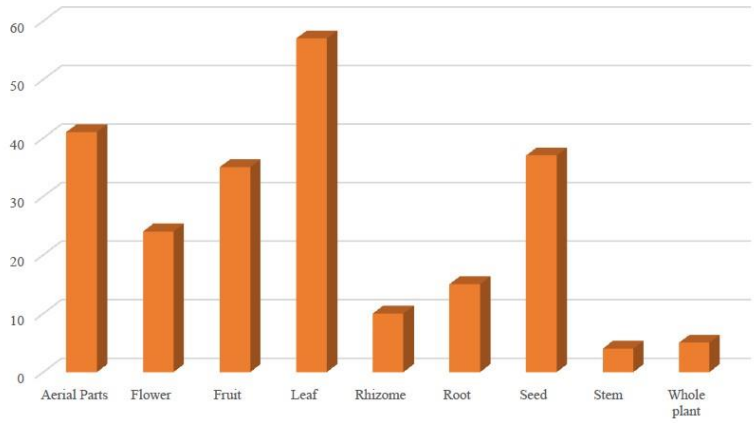

Figure 3. Plants parts used to treat pediatric diseases

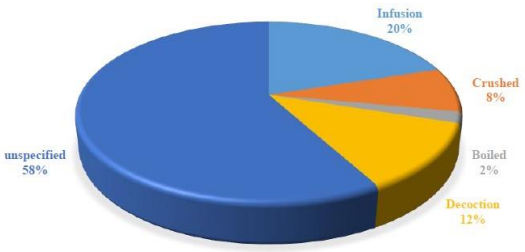

Figure 4. Preparation methods of the plants used to treat pediatric diseases

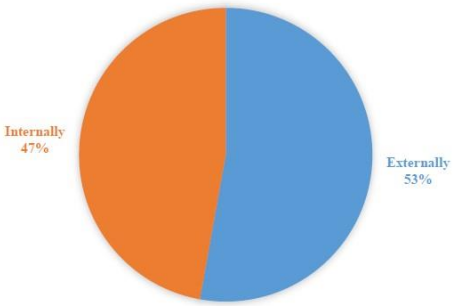

Figure 5. Adminstration methods of plants used to treat pediatric diseases

The 6 plant species with the highest usage value were described morphologically and examined in terms of their phytochemical and pharmacological properties.
- *Foeniculum vulgare* Mill.
- *Juglans regia* L.
- *Dryopteris filix- mas* (L.) Schott
- *Rosa canina* L.
- *Mentha x piperita* L.
- *Matricaria chamomilla* L.

***Foeniculum vulgare* Mill.**

Foeniculum vulgare Mill. is a biennial medicinal and aromatic plant belonging to the family Apiaceae (Umbelliferae) [17]. It is a hardy, perennial-umbelliferous herb with yellow Fl and feathery leaves. It grows to a height of up to 2.5 m withhollow stems. The leaves grow up to 40 cm long; they are finely dissected with the ultimate segments filiform (thread like) of about 0.5 mm wide. The Fl are produced in terminal compound umbels. The F is a dry S 4-10 mm long. It is generally considered

indigenous to the shores of Mediterranean Sea but has become widely naturalised in many parts of the world especially on dry soils near the sea coast and on the river banks. Some authors distinguish two sub-species of fennel, piperitum and vulgare: Sub-species piperitum has bitter Ss, while sub-species vulgare has sweet Ss which are used as flavouring agents in baked goods, meat and fish dishes, ice creams, alcoholic beverages, etc due to their characteristic anise odour [18].

It is a highly aromatic and flavourful herb with culinary and medicinal uses. Fennel Ss are anise like in aroma and are used as flavourings in baked goods, meat and fish dishes, ice cream, alcoholic beverages and herb mixtures [19]. Fennel and its herbal drug preparations are used for dyspeptic complaints such as mild, spasmodicgastric intestinalcomplaints, bloatingandflatulence. It is alsoused for the catarrh of the upper respiratory tract [103]. It is also used to flavor foods, liqueurs and in the perfumery industry [20].

The safety of medicinal and spice plants and of their preparations deserves increased scientific attention. One of the main conditions for use of herbal preparations in medicinal conditions is the absence of such risks as mutagenicity, carcinogenicity, and teratogenicity. In general, such products need to have minimal toxicity and side effects [21]. *Foeniculum vulgare* is used to eliminate gas and regulate intestinal function in children, may cause premature thelarche, and thus, the use of such preparations should be limited [22]. Our systematic review showed beneficial effect of *Foeniculum vulgare* (Fennel) on redaction of infantile colic and also led to significant increase on prolactin levels in lactating mothers [23].

***Juglans regia* L.**

The genus *Juglans* (family Juglandaceae) comprises several species and is widely distributed throughout the world. Green walnuts, shells, kernels and Ss, B, and leaves are used in the pharmaceutical and cosmetic industries [24,25]. Leaves are easily available in abundant amounts. Walnut leaves are considered to be a source of healthcare compounds and have been intensively used in traditional medicine for the treatment of venous insufficiency, hemorrhoids, hypoglycemia, diarrhea, and fungal or microbial infections.

Walnut (*Juglans regia* L.) is the most widespread tree nut in the world Walnut has been used in human nutrition since ancient times. The walnut tree is native to central Asia, the western Himalayan chain and Kyrgyzstan and was cultivated in Europe as early as 1000 BC^2. Since then, it has spread and become well adapted to many regions with Mediterranean- type ecosystems throughout the world [26]. At present, walnut is cultivated commercially throughout southern Europe, northern Africa, eastern Asia, the USA and western South America, Walnuts, the Ss of *Juglans regia* L. (Juglandaceae), are a highly nutritious food. They are also used as a traditional remedy for treating cough, stomach ache, and cancer in Asia and Europe [27].

Green walnuts, shells, ker- nels and Ss, B and leaves have been used in the phar- maceutical and cosmetic industries [24]. Leaves are easily available and in abundant amounts, while tree B is scarce and its collection compromise the plant life. Walnut leaves are considered a source of healthcare compounds, and have been intensively used in traditional medicine for treatment of venous insufficiency and haemorrhoidal symptomatology, and for its antidiarrheic, antihelmintic, depurative and astringent properties [28-30]. Keratolytic, antifungal, hypoglycaemic, hypotensive, antiscrofulous and sedative activities have also been described [31,32]. In Portugal, as in some other European countries, especially in rural areas, dry walnut leaves are frequently used as an Inf. The conclusion of the study was that the extract is safe and effective. There is some scientific evidence regarding the traditional use of *J. regia* in eczema, skin infections, scro- phulosis, intestinal parasites, but not in the pediatric population. The therapeutic efficacy in adults of various Juglans regia extracts was proved for certain skin dis- eases, such as eczema [33] and atopic dermatitis [35]. The plant also showed *in vitro* or *in vivo* anti-mycobacterial (Cruz-Vega) and antiparasitic activity [34,36,37].

***Dryopteris filix- mas* (L.) Schott.**

Dryopteris filix mas (L.) Schott from the family is Dryopteridaceae, a plant that has been used as an anthelmintic since the Middle Ages. Previously, its rhizome was used in the form of powdered drug in folk medicine, later the ethereal extract form was preferred [38].

Dryopteris filix-mas (Dryopteridaceae), commonly known as male fern, dryopteris or water loving fern, is an evergreen plant growing up to 60-150 cm. It is found in stream, moist environments, open grounds, stone and brick walls [39]. Its L Dec is popularly used by traditional healers in various parts of Edo and Delta States, Nigeria as a therapy for inflammation, rheumatoid arthritis, ulcers and wounds (Personal communication). Its reported pharmacological activities include antioxidant and cytotoxic [40], antimicrobial [41], antihelmintic [42], antidiarrheal [43] and tocolytic [44] activities. Considering the traditional benefits of *D. filix-mas* L in curbing inflammatory disorders among Southern Nigerian populace, this study evaluated its antiinflammatory properties and also characterized its bioactive anti- inflammatory component using bioassay- guided purification and isolation approaches. Dryopteris filix-mas' biological activities are not yet scientifically studied, except for its antiinflammatory potential (one animal study) [45]. *Dryopteris filix- mas* is more digestive: Intestinal worms, Skin: Wounds; Neurological: Epilepsy; Endocrine, metabolic and nutritional: Delayed growth; Psychological (ext): Insomnia; Musculo skeletal: Rickets, Bone diseases, Bone deformities; Blood and lymph nodes: Scrophulosis is used for the purpose [34].

***Rosa canina* L.**

Rosa canina L., a member of the Rosaceae family, is a shrub widespread in Europe. *Rosa canina* [Rosaceae], commonly known as kuşburnu, itburnu, kopek golo, has been used as both food and folk remedy in Anatolia. The genus Rosa contains over 100 species that are widely distributed mostly in Europe, Asia, the Middle East and North America [46] *Rosa canina* (dog rose) is an erect shrub of up to 3.5 meters height, sometimes climbing; its Bres are often curved or arched. Petals are white to pale pink, rarely deep pink and F ripens late [47].

Rosa canina is a medicinal plant largely used in traditional folk medicine. The use of *Rosa canina* as medicinal remedy dates back to the time of Hippocrates; the role of this plant peaked during the World War II when the syrup of rose hips, extremely rich in vitamin C, was introduced in the diet to overcome the lack of fresh citrus Fs and then to prevent the scurvy [48]. Rose hip extracts are nowadays used in traditional European folk medicine as diuretic, laxative, for kidney and lower urinary tract disorders, arthritis, gout, fever, colds and for vitamin C deficiency [49,50].

Rose Fs have long been used in Turkey for food, medicinal, and many other purposes and for several special traditional products such as rose hip F juice, rose hip jam, rose hip marmalade, rose hip pestil and rose hip syrup [51]. Additionally, rose hip tea is made with both their Fs and Ros [52].

In the German Commission E Monographs, Fs (rose-hips, with Ss) of *R. canina* are reported to possess prophylactic and therapeutic activities against a wide range of ailments, including the inflammatory disorders arthritis, rheumatism, gout, sciatica, for diseases with fever; for colds and infectious diseases including influenza, against gastrointestinal disorders, to aid digestion, prevention of inflammation of the gastric mucosa and gastric ulcer, for gallstones, biliary complaints, as a laxative, for disorders of the kidney and the lower urinary tract, as a diuretic, for dropsy and as an astringent.

In addition to the effects of the Fs described above, the F is known as the most effective remedy against hemorrhoids and diabetes mellitus in Turkish folk medicine. Besides, the Ros and leaves of the plant have also been used against bronchitis. To date, reports on the antioxidant, antiinflammatory, antiulcer, antimicrobial, antimutagenic effects and inflammatory cytokines inhibitory activity of *R. canina* Fs are available [53].

In pediatric diseases, the Fs of the Rosa canina plant are prepared by Inf and used for Diarrhea, Constipation, Abdominal pain [54-56] cold, while Dec is made for Endocrin diseases, Cachexia, Colic, Lack of Appetite [57,58].

***Mentha piperita* L.**

Mentha piperita, of the Labiatae or Lamiaceae family is a well-known plant that is used in numerous forms [ie, oil, L, L extract, and L water][59].

It is widely grown in temperate areas of the world, particularly in Europe, North America and North Africa but nowadays cultivated throughout all regions of the world. The medicinal parts are the essential oil extracted from the Aer of the Fling plant, the dried leaves, the fresh Fling plant he dried leaves, the fresh Fling plant and the whole plant. *M. piperita* is a perennial 50-90 cm high, normally

quadrangular and a prototypical member of the mint family [60]. The usually Bred stems are often purplish or tinged violet but sometimes they are gray-tomentose. The dark or light green leaves are short-petioled, oblong-ovate and serrate their margins finely toothed. The Fl are purple or pinkish having false spikes with numerous inconspicuous bracts and rarely bear Ss [61].

The plant is generally sterile and spreads by means of runners. The plant grows in a sunny side and prefers acid, neutral and basic, light, medium soils but can also grow in heavy clay soil [15].

In Eastern and Western traditional medicine peppermint and its oil have been used as an antispasmodic, aromatic, antiseptic and also in the treatment of cancers, colds, cramps, indigestion, nausea, sore throat and toothaches [60]. Peppermint oil possesses antibacterial activity *in vitro*. Different commercial preparations exhibit various activities [63]. Peppermint is also found to possess antiviral and fungicidal activities [64]. In clinical trials peppermint oil's role in irritable bowel syndrome affirms its effectiveness compared with a placebo with no serious constipation or diarrhea [65]. In this paper, the antibacterial effects of leaves extracts and essential oil against different bacterial strains, antioxidant activities and phytochemical screening of *M. piperita* are presented. Its L is used as a remedy for common cold, inflammation of the mouth, pharynx, liver, as well as disorders in the gastrointestinal tract such as nausea, vomiting, diarrhea, cramps, flatulence and dyspepsia. It is also used as antioxidant, antimicrobial, antiviral, antiinflammatory, and anticarcinogenic [66].

The list of purported benefits and uses of peppermint as a folk remedy or in complementary and alternative medical therapy include: biliary disorders, dyspepsia, enteritis, flatulence, gastritis, intestinal colic, and spasms of the bile duct, gallbladder and gastrointestinal (GI) tract [67].

In pediatric diseases, the leaves of the *Mentha piperita* plant are prepared by Inf and used for Diarrhea, Cramp [54,68,69] while Dec is made for Antispasmodic, Cold, Flu [69]; it is also used Ext in impetigo and wounds [68,70,71].

***Matricaria chamomilla* L.**

Matricaria chamomilla L. is a well-known medicinal plant species from the Asteraceae family often referred to as the "star among medicinal species. Nowadays it is a highly favored and much used medicinal plant in folk and traditional medicine. Its multitherapeutic, cosmetic, and nutritional values have been established through years of traditional and scientific use and research.

Chamomile has been used in herbal remedies for thousands of years, known in ancient Egypt, Greece, and Rome [72]. This herb has been believed by Anglo-Saxons as 1 of 9 sacred herbs given to humans by the lord. The chamomile drug is included in the pharmacopoeia of 26 countries [73].

It is an ingredient of several traditional, unani, and homeopathy medicinal preparations [74].

As a drug, it finds use in flatulence, colic, hysteria, and intermittent fever [75]. Chamomile is used mainly as an antiinflammatory and antiseptic, also antispasmodic and mildly sudorific [76]. It is used Int mainly as a tisane (infuse 1 table-spoonful of the drug in 1l of cold water and do not heat) for disturbance of the stomach associated with pain, for sluggish digestion, for diarrhea and nausea; more rarely and very effectively for inflammation of the urinary tract and for painful menstruation. Ext, the drug in powder form may be applied to wounds slow to heal, for skin eruptions, and infections, such as shingles and boils, also for hemorrhoids and for inflammation of the mouth, throat, and the eyes [77]. Tabulated products from chamomile Fl extracts are marketed in Europe and used for various ailments. Chamomile tea eye washing can induce allergic conjunctivitis. Pollen of *M. chamomilla* contained in these Infs are the allergens responsible for these reactions [76].

In pediatric diseases, the Fl of the *Matricaria chamomilla* L. plant are prepared by Inf and used for Abdomınal pain, cramps, Gas pain, Epilepsy, Thorat and Back pain [116], while Ext is made for Wounds, İmpetigo [54,57,78,79].

In concluding, even though debate continues as to whether plants are sufficiently effective in the treatment of pediatric diseases, herbal therapies are still in demand. Their popularity has increased even more in recent years due to belief that medicinal plants are cheaper and safer than allopathic medicines. There is an immense amount of information on herbal therapies which can help researchers, pharmacists and doctors. However, the most important problems encountered in herbal treatment are the lack of standardization of the active substance in the herbal preparations in terms of concentration and purity

and the inability to control their side effects. Therefore, the pediatrist who wants to use herbal treatment in practice should know the effects and side effects of the plant.

We have compiled the some medicinal plants traditionally used in the treatment of pediatric diseases and determined of them which are most frequently used. Despite the fact that there have been several pharmacological and phytochemical studies proving the efficacy of the plants in the treatment, more studies are needed for some species. In conclusion, findings reinforce the importance of the ethnobotanical literature as a potential source of pharmaceutical raw materials. It can be hoped that it will shed a light that can give life to these souls and guide them with health.

AUTHOR CONTRIBUTIONS

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CONFLICT OF INTEREST

The authors declare that there is no real, potential, or perceived conflict of interest for this article.

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