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Original Article

Situational diagnosis of the popular use of medicinal plants in pediatrics

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Abstract

This study aimed to describe the use of medicinal plants for the relief and treatment of pediatrics pathologies performed by parents of children registered in a Basic Health Unit. This is a cross-sectional, observational and analytical study that occurred from March until May 2016, with the participation of 176 individuals, using a semi-structured questionnaire as a research instrument. Descriptive statistics were applied for data analysis, using frequency distribution and chi-square test. Among all 177 indications of medicinal use of plants in childhood, considering the plant part and administration method, 61.6% converged with scientific data, 21.5% differed and 16.9% were new indications without a similar record in the literature. These results support the popular use of medicinal plants and show to need for greater awareness about the rational use of phytotherapy and stimulate scientific research, as they bring new elements about the therapeutic potential of different species.

Keywords: phytotherapy, pediatrics, clinical use.

Diagnóstico situacional do uso popular de plantas medicinais em pediatria

Resumo

O objetivo deste estudo foi descrever o uso de plantas medicinais para alívio e tratamento de patologias em pediatria realizado por pais de crianças cadastradas em uma Unidade Básica de Saúde. Trata-se de um estudo transversal, observacional e analítico, que ocorreu nos meses de março a maio de 2016, com a participação de 176 indivíduos, utilizando como instrumento de investigação um questionário semiestruturado. Para análise dos dados aplicou-se a estatística descritiva, com uso da distribuição de frequências e o teste do qui-quadrado. Das 177 indicações de uso medicinal de plantas na infância, considerando a parte da planta utilizada e sua forma de uso, 61,6% convergiram com os dados científicos, 21,5% divergiram e 16,9% foram novas indicações, sem registro semelhante na literatura. Esses resultados, ao mesmo tempo em que respaldam o uso popular de plantas medicinais, apontam a necessidade de maior conscientização sobre o uso racional da fitoterapia e estimulam a investigação científica, pois trazem novos elementos sobre o potencial terapêutico de diferentes espécies.

Palavras-chave: fitoterapia, pediatria, indicações terapêuticas.

1. Introduction

The use of plants for medicinal purposes is part of the culture of different populations (Badke et al., 2016), and also employed in relief and treatment of symptoms in childhood, with reports of early use in infants (Silva et al., 2020). Because it is considered a natural treatment, many consider it risk-free, which makes the population susceptible to severe adverse events due to the indiscriminate use of this therapeutic resource (Alcantara et al., 2015; Silva and Oliveira, 2018). Madrigal-Delgado et al. (2010) describes the intoxication in infants under 1 year old who had received a homemade infusion of *Anís de Estrella* from their parents as a treatment for symptoms of infant colic in Costa Rica.

Different researches indicate the lack of knowledge of the population and health professionals about the prescribed dosage, contraindications, side effects and dangers of the interaction of different species of popular use with allopathic drugs, taking this millennial tradition to discredit (Veiga-Junior, 2008; Nascimento et al., 2017).

According to Du et al. (2014), there are few studies with a representative population that show the use of phytotherapy in children, which justifies the low prevalence of this use

in several researches. Nascimento et al. (2017), pointed out that in recent decades there has been an increase on the demand for natural treatments to prevent or treat the most common pathologies of childhood, but emphasize that the use of herbal medicines should not be abusive and in some cases are not recommended in pediatrics.

This study aimed to describe the use of medicinal plants for the relief and treatment of pediatrics pathology in a community of a Basic Health Unit (BHU).

2. Material and Methods

This research was approved by the Research Ethics Committee of Centro Universitário Cesmac under number 1,431,492. All volunteers received information about the risks and benefits of their participation and then signed of the Free and Clarified Consent Term. The research was conducted within the ethical standards based on the guidelines of Resolution CNS Nº 466/12.

This is a cross-sectional, observational and analytical study carried out in a Basic Health Unit (BHU) in Maceió-AL, being a reference for pediatric care to adjacent localities. The data collection occurred in the months of March to May 2016.

The sample included in the study was consisted of parents or legal guardians of children registered in the Unified Health System (SUS) who used the pediatric outpatient clinic of the BHU during the research period. The sample calculation was performed using the OpenEpi® program, considering the average monthly number of 350 visits performed by the pediatrics sector with 99% confidence interval (CI), 5.5% acceptable error and 80% expected frequency for the use of medicinal plants (Brasil, 2006). The sample was determined in 176 individuals who received a sequence of letters and numbers as identification. Parents who reported having mental pathologies or who demonstrated intellectual inability to answer the questionnaire were excluded from the study.

The participants were approached through a verbal presential invitation at the BHU, while waiting for care or after it. The descriptive and analytical method was adopted, having as a research instrument an interview using a semi-structured investigative questionnaire, previously validated through the Delphi technique, and splitted in two groups: questions about the ethnopharmacological variables related to the use of medicinal plants for the main clinical complaints in pediatrics (herbs, indications, plant parts, used dosage, forms of use and side effects); questions about the acquisition of information about medicinal plants and the interest of the volunteer to participate in courses/lectures about the subject. During the interviews, aspects not punctuated in the questionnaire, but related to the use of medicinal plants were pointed out by the participants and deserving analysis and correlation with data from the scientific literature. Descriptive statistics were applied, using frequency distribution and chi-square test to compare frequencies observed at the significance level of $p < 0.05$ probability using BioEstat® 4.0 program.

3. Results

The obtained results showed that the 169 (96%) individuals reported having already use of medicinal plants to treat pathologies or relieve the symptoms in their children. It was reported 692 citations of 54 plant types, with emphasis on fennel (*Pimpinella anisum)*, 76 (11%); boldo (*Peumus boldus*), 70 (10.1%); thin-leaf-mint (*Mentha x villosa*), 68 (9.8%); pineaple (*Ananas comosus*), 65 (9.4%); mint (*Mentha arvensis*), 57 (8.2%); lemon balm (*Lippia alba*), 46 (6.7%); garlic (*Allium sativum*), 43 (6.2%); capim santo (*Cymbopogon citratus*), 36 (5.2%); aroeira (*Myracrodruon urundeuva*), 26 (3.8%) and ginger (*Zingiber officinalle*), 21 (3.0%) that had its indications, used part, administration form were compared with data found in the literature (Vieira, 1992; Matos, 1999, 2002; Araújo, 1999; Lorenzi and Matos, 2008; Gomes, 2009; Brasil, 2010, 2016; Santos et al., 2016).

Among the 54 plants cited with 177 indications of therapeutic forms, 35 species with 109 (61.6%) indications of use were in according with the literature related with clinical indication, part of the plant used and administration form (Table 1).

Among the 177 indications of cited therapeutic forms, 38 (21.5%), related to 26 species, presented clinical indication similar to scientific data, but it is not in according with the used part and/or administration form (Table 2).

Among the indications of therapeutic forms cited as medicinal use in pediatrics, 30 (16.9%), related to 21 species, found no record of similar use in the literature (Table 3).

There were 205 citations of prescribers of medicinal use in pediatrics, 159 (77.6%) by familiar, 17 (8.3%) by neighbors and 16 (7.8%) under medical guidance.

In according to 692 indicated dosage for pediatric use, 379 (54.7%) referred to measure units. These were non-standardized measure units, varying from a handful, a teaspoon, a cup. But, 184 (26.6%) of mentioned dosage referred to the indeterminate form.

In this community, among 169 respondents who already used plants in children, 114 (67.5%) do not have the habit of storing the plants neither before nor after preparing. The collection is made at the same time of use and using them shortly after their preparation (Table 4).

Among those who store the plant before use, 55 (32.5%), the storage time of these ranged from 1 to 90 days, being conserved in a refrigerator or at room temperature.

Among the respondents, 55 (32.5%) store the plant or its products after preparing in refrigerator or at room temperature for up to one month, depending of the resulting product from the use of these plants.

A highest concern in this community is related to the adulterations of medicinal herbs when purchased in free trade fairs and natural products store, since they are uninformed about the origin of the commercialized product.

Among the 169 respondents who made use of plants in pediatrics, 46 (27.2%) reported the associated use of medicinal plants with conventional medications; of these 18 (39.1%) do not reported the associated allopathic

Table 1. Plants cited by the community for medicinal use in pediatrics in accord to literature.

POPULAR NAME- SCIENTIFIC NAME	INDICATION (USED PART/ ADMINISTRATION FORM)	LITERATURE DATA		
		CLINIC INDICATION	USED PART	ADMINISTRATION FORM
Avocado- *Persea americana*	Urinary infection (leaf/tea)	Urinary infection	Fruit, leaf, shell and seed.	Tea
Pineaple- *Ananas comosus*	Expectorant (fruit/ natural syrup)	Expectorant	Fruit	Natural syrup
	Flu (fruit/ natural syrup)	Flu	Fruit	Natural syrup
	Cough (fruit, shell/tea, natural syrup and juice)	Cough	Fruit	Natural syrup and juice
Watercress- *Nasturtium officinale*	Cough (leaf/ natural syrup)	Cough	Seed, leaf, flower, stalk	Tea, natural syrup
Rosemary- *Rosmarinus officinalis*	Expectorant (leaf/ natural syrup)	Expectorant	Leaf	Natural syrup
	Nasal obstruction (leaf, stalk/tea, pillowcase)	Nasal obstruction	Leaf	Tea
Alfavaca- *Ocimum gratissimum*	Pain (leaf/tea)	Intestinal spasms	Leaf	Tea
Garlic- *Allium sativum*	Cough (bulb/tea, natural syrup)	Cough	Bulb	Tea
	Expectorant (bulb/tea, natural syrup)	Expectorant	Bulb	Tea
	Flu (bulb/tea, chew, natural syrup)	Flu	Bulb	Tea, tincture, alcoholic extract, fluid extract and oil pills
Aroeira- *Myracrodruon urundeuva*	Inflammation (leaf, shell, branch/tea, gargle, shower)	Anti-inflammatory	Leaf, shell, stalk bark	Tea, shower
	Healing (leaf, stalk shell/ tea, shower, topic)	Healing	Shell and stalk bark	Tea, shower
	Oral hygiene (stalk shell / mouth wash)	Bactericidal	Stalk bark	Tea
Aloe- *Aloe vera*	Healing (leaf/shower, paste and juice)	Healing	Leaf and fresh juice	Hydrophilic gel and ointment /Juice (topic)
	Burn (leaf/juice)	1st and 2nd degree burns	Dry leaves	Hydrophilic gel and ointment /Juice (topic)
	Polycystic Ovary Syndrom* (leaf/ concoctions)	Cancer	Leaves	Brandy maceration
	Infecction (leaf/juice)	Antimicrobial	Leaf	Juice
	Skin patches (leaf/juice-topic)	Skin inflammation and eczema.	Leaf	Juice
Barbatimão- *Stryphnodendron adstringens*	Healing (leaf, branch, shell/tea, tincture, shower)	Healing	Shell	Tea
	Inflammation (leaf, shell/ tincture, juice)	Throat inflammation	Shell	Tincture
Beet- *Beta vulgaris*	Cough (bulb/juice, natural syrup)	Cough	Bulb	Syrup
	Anemia (bulb/juice)	Anemia	Bulb	Salad and Juice

*In teenagers.

Table 1. Continued...

POPULAR NAME- SCIENTIFIC NAME	INDICATION (USED PART/ ADMINISTRATION FORM)	LITERATURE DATA		
		CLINIC INDICATION	USED PART	ADMINISTRATION FORM
Boldo- *Peumus boldus*	Abdominal pain (leaf/tea)	Liver and intestinal colic	Leaf	Tea
	Abdominal distension (leaf/ tea)	Dyspepsia	Leaf	Tea, capsule, pill.
	Colic (leaf/tea)	Liver and intestinal colic	Leaf	Tea
	Gases (leaf/tea)	Flatulence	Leaf	Tea
	Diarrhea (leaf/tea)	Diarrhea	Leaf	Tea
	Digestive (leaf/tea)	Functional Dyspepsia	Leaf	Tea/capsule or dry extract pill.
	Pain (leaf/tea)	Liver and intestinal colic	Leaf	Tea
	Gastritis (leaf/tea)	Stomachache	Leaf	Tea
Cabacinha- *Luffa operculata*	Sinusitis (vegetable bushing /inhalation)	Sinusitis	Fruit (Vegetable Bushing)	Inhalation and drops in the nostril
Red cashew- *Anacardium occidentale*	Anti-inflammatory(shell/tea)	Anti-Inflammatory	Pseudo fruit, chestnuts, leaves, shell, seed coat	Tea, gargle, mouth wash.
Chamomile- *Chamomilla recutita*	Calming (flower, leaf, sachet/tea)	Mild anxiety and Calming	Flowers	Tea, dry extract pill and tincture.
	Abdominal pain (sachet (flower)/tea)	Antispasmodic	Flower and aerial parts	Tea, dry extract pill and tincture.
	Eye hygiene (sachet (flower)/tea)	Anti-inflammatory, antiseptic, conjunctivitis.	Flower and aerial parts	Tea
	Sleeping (sachet (flower)/ tea)	Insomnia, mild sedative	Flower	Tea, dry extract pill and tincture.
Cinnamon- *Cinnamomum verum*	Nausea (shell/tea)	Nausea and vomit	Shell, leaves and powder.	Tea
	Fever (shell/tea)	Fever	Shell and leaves	Tea
	Gases (shell/tea)	Carminative	Shell and leaves	Tea
	Abdominal pain (shell/tea)	Antispasmodic and digestive	Shell and leaves	Tea
	Vomit (shell/tea)	Vomit	Shell and leaves	Tea
Capim santo- *Cymbopogon citratus*	Calming (leaf, stalk, whole plant/tea)	Calming	Leaves, rizhome and dry or fresh root.	Tea
	Abdominal pain (leaf/tea)	Analgesic, antispasmodic	Leaves, rizhome and dry or fresh root.	Tea
	Colic (leaf/tea)	Analgesic, antispasmodic	Leaves, rizhome and dry or fresh root.	Tea
	Diuretic (leaf/tea)	Diuretic	Leaves, rizhome and dry or fresh root.	Tea
	Abdominal distension (leaf/ tea)	Analgesic, Antispasmodic	Leaves, rizoma and dry or fresh root.	Tea
	Fever (leaf/tea)	Antipyretic	Leaves, rizoma and dry or fresh root.	Tea
	Regular use (leaf/tea)	Regular use	Leaf	Tea

*In teenagers.

Table 1. Continued...

POPULAR NAME- SCIENTIFIC NAME	INDICATION (USED PART/ ADMINISTRATION FORM)	LITERATURE DATA		
		CLINIC INDICATION	USED PART	ADMINISTRATION FORM
White onion- *Allium cepa*	Cough (bulb/natural syrup)	Cough, flu, cold.	Bulb	Syrup/Natural syrup, tea.
	Expectorant (bulb/ natural syrup)	Expectorant	Bulb	Syrup/Natural syrup, tea.
Lemon balm - *Lippia alba*	Calming (leaf, powder/tea)	Calming	Aerial parts (leaves and flowers)	Tea and tincture
	Abdominal pain (leaf/tea)	Antispasmodic; Intestinal pain treatment.	Leaves and flowers	Tea
	Abdominal distension (leaf, seed/tea)	Digestive	Leaves and flowers	Tea and wine
	Regular use (leaf/tea)	Regular use	Leaves	Tea
	Colic (leaf/tea)	Antispasmodic	Aerial parts (leaves and flowers)	Tea and wine
	Headache (leaf/tea)	Headaches, epilepsies and migraines.	Leaves	Tea
	Pain (leaf/tea)	Analgesic	Leaves and flowers	Tea, topic use.
	Gases (leaf/tea)	Carminative	Leaves and flowers	Tea
	Sleeping (sachet/tea)	Insomnia, Sedatives	Leaves and flowers	Tea, tincture
Fennel - *Pimpinella anisum*	Calming (leaf, seed, sachet, powder/tea)	Insomnia	Seeds	Tea and tincture
	Colic (leaf, seed, sachet/tea)	Antispasmodic and carminative	Seeds and fruits	Tea
	Abdominal pain (leaf, flower, seed, sachet/tea)	Antispasmodic	Seeds and fruits	Tea
	Constipation (leaf, seed/tea)	Gastrointestinal stimulant	Seeds	Tea
	Abdominal distension (leaf, seed/tea)	Digestive	Seeds and fruits	Tea and powder
Eucalyptus- *Eucalyptus tereticornis*	Fever (leaf/tea)	Fever	Leaves	Tea
	Cough (leaf/inhalation, natural syrup)	Cough, flus, cold and Airway clearance.	Leaves	Tea, natural syrup
Ginger - *Zingiber officinale*	Sore throat (rhizome/tea, chew, juice)	Antimicrobial, Anti-inflammatory, sore throat, hoarseness.	Rizhome	Tea, chew.
	Cough (rhizome/tea, natural syrup)	Cough, bronchitis, cold and asthma.	Rizhome	Tea, ginger candies
	Flu (rhizome/tea, natural syrup)	Flu and cold	Rizhome	Tea and ginger candies
	Gastritis (rhizome/tea)	Dyspepsias	Rizhome	Tea, capsule, pill, tincture and ginger powder.
	Inflammation (rizhome/tea)	Anti-inflammatory	Rizhome	Tea, tincture.
Guava - *Psidium guajava*	Diarrhea (sprout/tea)	Acute non-infectious diarrhea	Shell, sprout, leaves and root.	Tea, capsule, pill.
	Abdominal pain (leaf/tea)	Abdominal pain	Shell, sprout, leaves and root.	Tea and maceration
Guaco- *Mikania glomerata*	Expectorant (leaf/tea, natural syrup)	Expectorant	Leaf	Tea
	Flu (leaf/tea, natural syrup)	Flu and cold	Leaf	Tea

*In teenagers.

Table 1. Continued...

POPULAR NAME- SCIENTIFIC NAME	INDICATION (USED PART/ ADMINISTRATION FORM)	LITERATURE DATA		
		CLINIC INDICATION	USED PART	ADMINISTRATION FORM
Mint - *Mentha arvensis*	Abdominal pain (leaf/tea)	Anesthetic of the digestive tract	Leaf	Tea
	Cough (leaf/tea, natural syrup)	Cough	Leaf	Tea
	Flu (leaf/tea, natural syrup, inhalation)	Flu	Leaf	Natural syrup
	Expectorant (leaf/tea, natural syrup)	Flu and cough	Leaf	Natural syrup
	Abdominal distension (leaf/ tea)	Anesthetic of the digestive tract	Leaf	Tea
Mint - *Mentha arvensis*	Pain (leaf/tea)	Pain	Leaf	Tea
	Inflammation (leaf/tea)	Inflammation	Leaf	Tea
Big-leaf-mint- *Plectranthus amboinicus*	Expectorant (leaf/tea, natural syrup)	Expectorant	Leaf	Tea
	Cough (leaf/ natural syrup)	Cough	Leaf	Natural syrup
	Healing (leaf/juice-topic)	Healing	Leaf	Topic
Thin-leaf-mint - *Mentha x villosa*	Colic (leaf/tea)	Colic	Leaf	Tea
	Abdominal pain (leaf/tea)	Analgesic and Anesthetic of the digestive tract	Leaf	Tea
	Cough (leaf/tea, natural syrup)	Cough	Leaf	Tea
	Abdominal distension (leaf/ tea)	Digestive and intestinal stimulant	Leaf	Tea
	Flu (leaf/tea, natural syrup)	Respiratory infections, cough and expectorant.	Leaf	Tea
	Expectorant (leaf/tea, natural syrup)	Expectorant	Leaf	Tea
	Diarrhea (leaf/tea)	Gastrointestinal affections	Leaves and branch	Tea
	Headache (leaf/tea)	Headache	Leaf	Tea
	Pain (leaf/tea)	Topical anesthetic and analgesic	Leaf	Tea
Lemon- *Citrus latifolia*	Flu (fruit/tea, juice)	Flu	Fruit and shell	Tea and tincture
	Expectorant (fruit/tea)	Bronchopneumonia, flu and cold.	Fruit	Tea
Malva santa- *Plectranthus barbatus*	Abdominal pain (leaf/tea)	Abdominal pain	Leaf	Tea
Passion fruit- *Passiflora edulis*	Calming (leaf/tea)	Calming, sedative and Anxiolytic.	Leaves, flowers and fruits.	Tea, juice, fresh plant, vegetable drug, fluid extract, tincture.
Mastruz- *Chenopodium ambrosioides*	Expectorant (leaf, branch / juice)	Expectorant	Leaf	Juice
	Verminosis (leaf, branch/ juice)	Vermifuge	Leaf, flowers and seed.	Juice, tea, natural syrup.
Pião roxo- *Jatropha gossypiifolia*	Healing (leaf/juice)	Healing	Leaf	Juice

*In teenagers.

Table 1. Continued...

POPULAR NAME- SCIENTIFIC NAME	INDICATION (USED PART/ ADMINISTRATION FORM)	LITERATURE DATA		
		CLINIC INDICATION	USED PART	ADMINISTRATION FORM
Pitanga- *Eugenia uniflora*	Diarrhea (leaves/ tea)	Non-infectious diarrhea	Leaves and shell	Tea
	Abdominal pain (leaves/ tea)	Analgesic	Leaves and fruit	Tea
Stone breaker- *Phyllanthus niruri*	Renal/biliary lithiasis (root/ tea)	Renal lithiasis	Aerial parts/root/ whole plant	Tea
Pomegranate- *Punica granatum*	Sore throat (shell/tea)	Throat inflammation	Shell	Tea – Mouth wash/gargle
Elderberry - *Sambucus australis*	Cough (flower, leaf/tea, natural syrup)	Cough	Flower	Tea
	Expectorant (flower/tea)	Flu and cold	Flower	Tea
	Fever (bunch/tea)	Fever	Leaves and flowers	Tea

*In teenagers.

Table 2. Plants cited by the community for medicinal use in pediatrics without agreement to literature.

POPULAR NAME - SCIENTIFIC NAME	INDICATION (USED PART/ ADMINISTRATION FORM)	LITERATURE DATA		
		CLINIC INDICATION	USED PART	ADMINISTRATION FORM
Pineaple- *Ananas comosus*	Sore throat (fruit/natural syrup)	Sore throat	Fruit	Juice
Acerola- *Malpighia emarginata*	Expectorant (fruit, stalk/ natural syrup)	Expectorant	Fruit	Direct consumption
Watercress- *Nasturtium officinale*	Expectorant (stalk, leaf, whole plant/natural syrup)	Expectorant	Seed, leaf, flower, stalk	Tea, syrup, juice
Rosemary- *Rosmarinus officinalis*	Fever (leaf/shower)	Fever	Leaf	Tea
Cotton- *Gossypium herbaceum*	Asthma (seed/tea)	Asthma	Shell, root and leaves	Tea
	Anti-inflammatory (seed/tea)	Skin inflammation	Shell, root and leaves	Tea
	Burn (fruit/topic)	Burn	Leaves	Juice-topic
	Ear pain (seed/juice-topic)	Ear pain	Fruit	Juice-topic
Garlic- *Allium sativum*	Abdominal distension (bulb/ chew)	Colic, flatulence and constipation	Bulb	Tea
Aroeira - *Myracrodruon urundeuva*	Itching (leaf/tea, shower, powder)	Allergies	Shell	Shower
	Sanitize (leaf/shower)	Bactericidal	Stalk shell	Tea
	Abdominal pain (leaf/tea)	Analgesic and antispasmodic	Stalk bark	Tea
	Infection (leaf/tea)	Bactericidal	Stalk bark	Tea
	Cleaning of the private parts (leaf/shower)	Anti-inflammatory, bactericidal and healing	Shell e stalk bark	Tea
	Abdominal distension (leaf/ tea)	Analgesic and antispasmodic	Stalk bark	Tea
Aloe- *Aloe vera*	Inflammation (leaf/shower)	Anti-inflammatory	Leaves	Juice, infusion
Beet- *Beta vulgaris*	Flu (bulb/juice)	Cough	Bulb	Syrup
Capim santo- *Cymbopogon citratus*	Tune the blood (leaf/tea)	Blood clearance	Grass rizhome	Tea
Cabbage- *Brassica rapa*	Anemia (leaf/juice)	Anemia	Leaf	Direct consumption

Table 2. Continued...

POPULAR NAME - SCIENTIFIC NAME	INDICATION (USED PART/ ADMINISTRATION FORM)	LITERATURE DATA		
		CLINIC INDICATION	USED PART	ADMINISTRATION FORM
Fennel- *Pimpinella anisum*	Sleeping (leaf/tea)	Insomnia	Seed	Tea e tincture
	Regular use (leaf/tea, shower)	General use	Seed	Tea
Erva dos calos- *Chelidonium majus*	Tumoration (Leaf/Tea)	Tumoration	Latex – Leaves and branch	Topic
Ginger- *Zingiber officinale*	Expectorant (rizhome/natural syrup)	Expectorant	Rizhome	Tea
Mint- *Mentha arvensis*	Colic (leaf/tea)	Colic	Leaf	Natural syrup
	Fever (leaf/tea)	Fever	Leaf	Natural syrup
Big-leaf-mint- *Plectranthus amboinicus*	Abdominal pain (leaf/natural syrup)	Anesthetic of the digestive tract	Leaf	Tea
Thin-leaf-mint- *Mentha x villosa*	Ear pain (leaf/juice-topic)	Topic Anesthetic and analgesic	Leaves and branch	Tea
Jurubeba herb- *Solanum paniculatum*	Cough (seed, fruit/natural syrup)	Cough	Fruit	Tea
Bitter orange- *Citrus aurantium*	Calming (shell/tea)	Light Calming	Leaves and flower	Tea
Lemon- *Citrus latifolia*	Cough (fruit/natural syrup)	Cough	Fruit	Tea, juice, tincture
Malva- *Malva sylvestris*	Expectorant (leaf/natural syrup)	Expectorant	Leaves and flower	Tea
Basil - *Ocimum basilicum*	Cough (leaf/natural syrup)	Cough	Leaf	Tea
	Fever (leaf/shower)	Antipyretic, diaphoretic.	Leaf	Tea
	Nasal obstruction (leaf/ shower, inhalation)	Nasal obstruction	Leaves and branch	Juice
Passion fruit- *Passiflora edulis*	Cough (seed/juice)	Cough, asthma, pertussis.	Leaves	Tea
Picão- *Bidens pilosa*	Skin disease (stalk/shower)	Skin diseases (Erysipelas, Ulcers, Wounds and Mycoses).	Leaves and root	Shower
Pepper- *Capsicum frutescens*	Skin tumor (leaf/topic)	Boils and Abscesses	Fruit	Poultice
Stone breaker- *Phyllanthus niruri*	Milk teeth eruption (root/tea)	Analgesic and anti-Inflammatory	Aerial parts	Tea

Table 3. Plants cited by the community as of medicinal use in pediatrics, without registration of indications in the literature.

POPULAR NAME - SCIENTIFIC NAME	INDICATION		
	POPULAR INDICATION	USED PART	ADMINISTRATION FORM
Aloe- *Aloe vera*	Hair hydration	Leaf	Juice
	Expectorant	Leaf	Natural syrup
	Cough	Leaf	Natural syrup
Barbatimão- *Stryphnodendron adstringens*	Colic	Shell	Tea
English potato- *Solanum tuberosum*	Headache	Tuber	Plaster
Beet- *Beta vulgaris*	Expectorant	Bulb	Natural syrup
	Sore throat	Bulb	Juice
Boldo- *Peumus boldus*	Calming	Leaf	Tea

Table 3. Continued...

POPULAR NAME - SCIENTIFIC NAME	INDICATION		
	POPULAR INDICATION	USED PART	ADMINISTRATION FORM
Cansanção- *Cnidoscolus pubescens*	Cough	Stalk	Natural syrup
Capim santo- *Cymbopogon citratus*	Nasal obstruction	Leaf	Inhalation
Chicory- *Cichorium intybus*	Cough	Leaf	Natural syrup
Chumbinho- *Lantana camara*	Cough	Flower	Natural syrup
Lemon balm- *Lippia alba*	Nausea	Leaf	Tea
Fennel- *Pimpinella anisum*	Nausea	Leaf, seed	Tea
	Nasal obstruction	Seed	Inhalation
Mint- *Mentha arvensis*	Regular use	Leaf	Tea, juice
	Wheezing	Leaf	Inhalation
	Intestinal gases	Leaf	Tea
Big-leaf-mint- *Plectranthus amboinicus*	Ear pain	Leaf	Juice-topic
Thin-leaf-mint- *Mentha x villosa*	Calming	Leaf	Tea
Juá- *Ziziphus joazeiro*	Teeth softening	Stalk	Mouth wash
Basil- *Ocimum basilicum*	Calming	Leaf	Shower
Para tudo- *Tabebuia aurea*	Pain	Leaf	Tea
	Headache	Leaf	Plaster
Pega pinto- *Boerhavia diffusa*	Milk teeth eruption	Root	Tea
Pião roxo- *Jatropha gossypiifolia*	Fever	Leaf, branch	Topic
Sambacaitá- *Hyptis pectinata*	Healing	Leaf, stalk	Plaster, juice, shower
	Inflammation	Leaf, branch	Shower
	Skin patches	Leaf	Shower
Terramicina- *Alternanthera brasiliana*	Skin inflammation	Leaf	Shower

Table 4. Percentage distribution of the storage habit of medicinal plants before and after preparing

Medicinal Plants Storage	(n)* / %	P**	Storage place	(n)* / %	P**
Before preparing		<0.01***	Before preparing		>0.05***
Yes	(55)/32.5		Refrigerator	(24)/42.9	
No	(114)/67.5		Room temperature	(31)/55.3	
			Next to firewood fire	(1)/1.8	
After preparing		<0.01***	After preparing		<0.01***
Yes	(55)/32.5		Refrigerator	(39)/69.6	
No	(114)/67.5		Room temperature	(17)/30.4	

*n: absolute value. **P: significance level. ***Pearson's chi-square test. Source: Research data (2016).

drug and 28 (60.9%) quoted 40 combinations. Among them, 16 (40%) realized a short combination with analgesic-antipyretic agents and 10 (25%) with antitussives.

When questioned about some side-effect was observed with the use of plants as medications that made them discontinue use, 165 (97.6%) do not reported any symptomatology and 4 (2.4%) reported 05 side-effects like diarrhea, pruritus, cough, stomach pain and tachycardia, occurring while used the plant like tea.

In the present study, 27 (15.3%) interviewees reported having already received some information about the use of medicinal plants, especially the exhibition fairs, 5 (2.8%), schools, 5 (2.8%) and TV shows, 2 (1.1%). However, among these respondents, 23 (85.2%) did not know when they received this information. It should be emphasized that 149 (84.7%) interviewees informed the interest in workshops or lectures that approached the use of plants with medicinal properties.

4. Discussion

The high frequency of the use of medicinal plants in the pediatric population of this community (96%), demonstrates the importance of this therapeutic resource for the prevention and relief of symptoms in childhood pathologies. Du et al. (2014), reported a low prevalence of use of herbal medicinal products among children and adolescents in Germany, Italy and the United States, however,

there is no standardization in the period of evaluation of use among the different studies in pediatrics, there are difficulties to make comparisons and generalizations of results.

All 54 plants for pediatric use quoted in this community are among the main medicinal herbs of popular (Motta et al., 2016; Griz et al., 2017; Lima et al., 2017; Melro et al., 2020).

The agreement between the popular use of 35 species of medicinal plants carried out in this community and the data of scientific literature, considering indications of use, used part and administration form, indicate the importance of popular reports and experiences as support for scientific development in phytotherapy (Oliveira et al., 2018). According to Silva and Oliveira (2018), much of what is known about the treatment with the plants comes from popular knowledge.

The differences between indications of popular use of 26 plant species quoted by the community and the indications use of scientific literature, considering the plant parts and/or administration form, show the need to inform the population about the proper and rational use of medicinal plants avoiding damage to children's health. Lima et al. (2017), in a study about the practices of healing and the use of medicinal plants carried out by riverside mothers in childcare, found the divergence between the indications in the specialized literature of some traditional herbal medicines used in this community, with regard to their chemical composition and the use.

The finding of 21 species with new forms of therapeutic indications pointed out by this community and without the use of scientific literature, emphasizes the importance of further studies that expand the possibilities of use of the species, proving their use or warning to possible risks of its use.

The present study showed that the indications use in childhood are made by people close to children, occurring in the family environment or by neighbors, similar to the data found in the studies by Veiga-Junior (2008); Motta et al. (2016), Lima et al. (2017) and Melro et al. (2020), demonstrating that this knowledge constitutes a tradition passed through generations and members of the same community.

The lack of standardization in the dosage of pediatric use of plants in this community brings concern; fact already reported by Alcantara et al. (2015), showing the risks of its misuse and/or possible abuses in its dosage.

Most of medicinal plants and phytotherapic used by self-medication or by medical prescription do not have their well-known toxic profile. In Brazil, there is a need to develop multidisciplinary studies aiming to increase the knowledge about medicinal plants, defining the 1) action mechanisms, 2) posology, 3) toxic and side-effects, and 4) interactions with allopathic medications; As well as the creation of strategies for quality control in their production (Veiga-Junior et al., 2005; Zago, 2018) and the dissemination of these results between health professionals and the general population, guaranteeing the safe use of this natural resource (Motta et al., 2016; Nascimento et al., 2017).

The report of the collection of medicinal herbs only at the time of use and the immediate consumption of the products soon after their preparation brings a relief, because an inadequate storage of vegetable origin products may lead to contamination of the sample by fungi, bacteria or lead to reduction of the bioactive compounds, either by variation and/or increase at room temperature or by decomposition promoted by these microorganisms producing toxic substances (Ramos and Damascena, 2018).

The concern by the interviewees about the risk of adulteration in medicinal herbs is supported by the scientific literature that affirms that the control over the commercialization of medicinal plants in Brazil by the official agencies in free trade fairs, public markets or stores of natural products is incipient, and warns of the risks of erroneous identification of the plant by the trader and possible adulteration of the products, risks of drug interactions if associated with allopathic medicine, in addition to the effects of overdoses and allergic or toxic reactions (Veiga-Junior et al., 2005; Nicoletti et al., 2010; Ramos and Damascena, 2018).

The concomitant use of medicinal plants with conventional allopathic treatment performed in children in this community brings concern. Scientific research claim that certain species present potentially hazardous substances, emphasizing the importance of their careful use and the toxicological risks or still cause irreversible damage to organism. (Veiga-Junior et al., 2005; Oliveira et al., 2018; Zago, 2018). Madrigal-Delgado et al. (2010) described the intoxication occurred in children under 1 year old treated at emergency hospital in Costa Rica who presented digestive and neurological symptoms after consumption of *Anís de Estrella* herb tea as treatment for infant colic.

In order to reduce the risk and harm to children's health, it is important to develop educational mechanisms aimed to the population that guide the rational use of medicinal plants, demystifying the concept that plants due the its natural being, do not pose any risks to human health, presenting correct information about the medicinal and toxic properties of plants.

Practices involving phytotherapy should be understood as social practices, whose meanings and values are constructed historically and socially. Phytotherapy has given credibility and legitimacy to a knowledge that has its beginning in the empirical experience of the population. The linkage between popular and scientific knowledge brings some reflections about the health-disease process and its cultural and social determinations, assisting in the formulation and planning of public policies that represent the real desires of society.

5. Conclusions

The use of medicinal plants for relief or treatment of pediatric pathologies found a high frequency in this community, having been performed by most of the

interviewees, whose knowledge was acquired mainly through family transmission and shared in the community itself. The main plants inserted in the practices of childcare were fennel, boldo, thin-leaf-mint and pineapple.

In this study, among the 177 indications of cited therapeutic forms as medicinal use in pediatrics, 109 found scientific support regarding its indication, part of the plant used and administration form; 38 indications diverged with the scientific literature regarding the part of the plant and/or administration form; And 30 new indications were pointed out by the community, not finding a similar record in the literature.

However, the lack of standardization in the medicinal plants dosage and the concomitant use between phytotherapy with allopathic treatment are of concern due to the risks of toxicity and serious damage to health.

These results showed that the 1) support the popular use of medicinal plants, valuing the tradition of this knowledge 2) warn of the need for greater dissemination and awareness about the rational use of phytotherapy, avoiding side-effects and 3) stimulate scientific research, since they bring new elements about therapeutic potential of different species.

A greater knowledge by population and health professionals about the scientific research that regarding the therapeutic use of plants, in accordance with the dosage, contraindications, side-effects and the risks of drug interactions between different species of popular use with allopathic drugs, would minimize accidents, ensuring respect for this tradition as well as its perpetuation.

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References

ALCANTARA, R.G.L., JOAQUIM, R.H.V.T. and SAMPAIO, S.F., 2015. Plantas medicinais: o conhecimento e uso popular. *Revista de Atenção Primária em Saúde*, vol. 18, no. 4, pp. 470-482.

ARAÚJO, I. 1999. *A medicina popular*. 3. ed. Natal: EDUFRN, 118 p.

BADKE, M.R., SOMAVILLA, C.A., HEISLER, E.V., ANDRADE, A., BUDÓ, M.L.D. and GARLET, T.M.B., 2016. Saber popular: o uso de plantas medicinais como forma terapêutica no cuidado à saúde. *Revista de Enfermagem da Universidade Federal de Santa Maria*, vol. 6, no. 2, pp. 225-234. http://dx.doi.org/10.5902/2179769217945.

BRASIL. Ministério da Saúde. Secretaria de Ciência, Tecnologia e Insumos Estratégicos. Departamento de Assistência Farmacêutica, 2006. *A fitoterapia no SUS e o Programa de Pesquisa de Plantas Medicinais da Central de Medicamentos*. Brasília, 148 p.

BRASIL. Agência Nacional de Vigilância Sanitária – ANVISA, 2010 [viewed 10 October 2015]. *Anexo I da Resolução RDC nº 10, de 9 de março de 2010. Dispõe sobre a notificação de drogas vegetais junto à Agência Nacional de Vigilância Sanitária (ANVISA) e dá outras providências* [online]. Diário Oficial da República Federativa do Brasil, Brasília, 10 mar. Available from: http://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2010/anexo/anexo_res0010_09_03_2010.pdf

BRASIL. Agência Nacional de Vigilância Sanitária – ANVISA, 2016 [viewed 24 September 2016]. *Memento Fitoterápico: farmacopeia brasileira* [online]. Brasília. Available from: http://portal.anvisa.gov.br/documents/33832/2909630/Memento+Fitoterapico/a80ec477-bb36-4ae0-b1d2-e2461217e06b

DU, Y., WOLF, I.K., ZHUANG, W., BODEMANN, S., KNÖSS, W. and KNOPF, H., 2014. Use of herbal medicinal products among children and adolescents in Germany. *BMC Complementary and Alternative Medicine*, vol. 14, no. 1, pp. 218. http://dx.doi.org/10.1186/1472-6882-14-218. PMid:24988878.

GOMES, M. 2009. *As plantas da saúde: guia de tratamentos naturais*. 4. ed. São Paulo: Paulinas, 351 p.

GRIZ, S.A.S., MATOS-ROCHA, T.J., SANTOS, A.F., COSTA, J.G. and MOUSINHO, K.C., 2017. Medicinal plants profile used by the 3rd District population of Maceió-AL. *Brazilian Journal of Biology = Revista Brasileira de Biologia*, vol. 77, no. 4, pp. 794-802. http://dx.doi.org/10.1590/1519-6984.01116. PMid:28492798.

LIMA, R.F.S., TURRINI, R.N.T., SILVA, L.R., MELO, L.D.S. and AUGUSTO, S.I., 2017. Práticas populares de cura e o uso de plantas medicinais por mães ribeirinhas no cuidado infantil. *Revista Fundamental Care*, vol. 9, no. 4, pp. 1154-1163. http://dx.doi.org/10.9789/2175-5361.2017.v9i4.1154-1163.

MELRO, J.C.L., FONSECA, S.A., SILVA JÚNIOR, J.M., FRANCO, S.P.B., SOUZA, M.A., PIMENTEL, Y.F.C., BOMFIM, M.R.P., ALMEIDA, E.M., COSTA, J.G., MATOS-ROCHA, T.J. and SANTOS, A.F., 2020. Ethnodirigid study of Medical plants used by the population assisted by the "Programa de Saúde da Família" (Family Health Program) in Marechal Deodoro-AL, Brazil. *Brazilian Journal of Biology = Revista Brasileira de Biologia*, vol. 80, no. 2, pp. 410-423. http://dx.doi.org/10.1590/1519-6984.214039.

LORENZI, H. and MATOS, F.J.A., 2008. *Plantas medicinais no Brasil: nativas e exóticas*. 2. ed. São Paulo: Instituto Plantarum, 576 p.

MADRIGAL-DELGADO, A., JIMÉNEZ-CHAVERRI, A.L., QUIRÓS, D. and ACOSTA-GUALANDRI, A., 2010. Intoxicación con anís de estrella en niños menores de 12 meses, en el Hospital Nacional de Niños "Dr. Carlos Sáenz Herrera" durante el periodo 2001-2005. *Acta Pediatrica Costarricense*, vol. 22, no. 1, pp. 40-46.

MATOS, F.J.A., 1999. *Plantas da medicina popular do Nordeste: propriedades atribuídas e confirmadas*. Fortaleza: EUFC, 80 p.

MATOS, F.J.A., 2002. *Farmácias Vivas: sistema de utilização de plantas medicinais projetado para pequenas comunidades*. 4. ed. Fortaleza: EUFC, 267 p.

MOTTA, A.O., LIMA, D.C.S. and VALE, C.R., 2016. Levantamento do uso de plantas medicinais em um centro infantil em Goiânia-GO. *Revista da Universidade Vale do Rio Verde*, vol. 14, no. 1, pp. 629-646. http://dx.doi.org/10.5892/ruvrd.v14i1.2613.

NASCIMENTO, L.M.F., PIMENTEL, M.H. and ARAGÃO, M.A.G.R., 2017. Uso de produtos naturais com fins terapêuticos em pediatria. *Revista Egitania Sciencia*, no. 21, pp. 111-128.

NICOLETTI, M.A., CARVALHO, K.C., OLIVEIRA-JÚNIOR, M.A., BERTASSO, C.C., CAPOROSSI, P.V. and TAVARES, A.P.L., 2010. Uso popular de medicamentos contendo drogas de origem vegetal e/ou plantas medicinais: principais interações decorrentes. *Revista Saúde.*, vol. 4, no. 1, pp. 25-39.

OLIVEIRA, V.B., MEZZOMO, T.R. and MORAES, E.F., 2018. Conhecimento e uso de plantas medicinais por usuários de unidades básicas de saúde na região de Colombo, PR. *Revista Brasileira de Ciências da Saúde.*, vol. 22, no. 1, pp. 57-64. http://dx.doi.org/10.22478/ufpb.2317-6032.2018v22n1.30038.

RAMOS, E.S. and DAMASCENA, R.S., 2018. Avaliação do uso de plantas medicinais na academia da saúde do município de Rio de Contas/BA. *Id on line Revista Multidisciplinar e de Psicologia*, vol. 12, no. 42, suppl. 1, pp. 75-84. http://dx.doi.org/10.14295/idonline.v12i42.1416.

SANTOS, A.F., FONSECA, K.C.M., MELO, I.A.F., FONSECA, S.A., COSTA, J.G., FORTES, C.R. and MEIRELES, M.E.C. 2016. *Memento fitoterápico: um guia básico do uso correto das plantas medicinais*. Maceió: CESMAC, 44 p.

SILVA, C.L., FEITOSA, C.C.N.M., FIDELIS, R.L.R., BUENO, M.M., MARQUES, A.A., CALLOU, M.A.M. and ROCHA, E.M.B., 2020. Consumo de infusões medicinais em crianças de 0-6 meses de idade. *Id on line Revista Multidisciplinar e de Psicologia*, vol. 14, no. 49, pp. 184-194. http://dx.doi.org/10.14295/idonline.v14i49.2308.

SILVA, M.I. and OLIVEIRA, H.B., 2018. Desenvolvimento de software com orientações sobre o uso de plantas medicinais mais utilizadas do sul de Minas gerais. *Brazilian Applied Science Review.*, vol. 2, no. 3, pp. 1104-1110.

VEIGA-JUNIOR, V.F., 2008. Estudo do consumo de plantas medicinais na Região Centro-Norte do Estado do Rio de Janeiro: aceitação pelos profissionais de saúde e modo de uso pela população. *Revista Brasileira de Farmacognosia*, vol. 18, no. 2, pp. 308-313. http://dx.doi.org/10.1590/S0102-695X2008000200027.

VEIGA-JÚNIOR, V.F., PINTO, A.C. and MACIEL, M.A.M., 2005. Plantas Medicinais: cura segura? *Quimica Nova*, vol. 28, no. 3, pp. 519-528. http://dx.doi.org/10.1590/S0100-40422005000300026.

VIEIRA, L.S., 1992. *Fitoterapia da Amazônia: manual das plantas medicinais: a farmácia de Deus*. 2. ed. São Paulo: Agronômica Ceres, 347 p.

ZAGO, L.M.S., 2018. Vinte e dois anos de pesquisa sobre plantas medicinais: uma análise cienciométrica. *Revista Tecnia*, vol. 3, no. 1, pp. 157-173.