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Research Article

Lehya formulations for mother and child care in Havyak community of Uttara Kannada district, Karnataka, India

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Abstract

The period between pregnancy and the child birth is a critical phase in the lives of mothers and newborn babies. In most of the Asian countries including India, the use of medicinal plants, cultural traditions and the diets practiced by the ethnic groups have their age old histories. Present study was carried out to compile the traditional knowledge of the age old practitioners on pre and postnatal remedies. The survey was carried out in the areas of Sirsi, Siddapur and Mundgod taluks of Uttara Kannada district, Karnataka state, India. Medicinal plants were collected and quantitative data analyses like Use Value (UV), Relative frequency citation (Rfc) and Family Importance Value (FIV) have been provided to analyze the importance of reported plants. The study revealed the use of 28 plant species belonging to 19 families. The home remedies for pregnant women are in the form of paste, called 'Lehya' in local language. Habit-wise analysis of the plants indicate that herbs are highly used (35.71%) and in most of the case fruits (32.14%) and seeds (25%) are frequently used plant parts in 'Lehya' preparation. The most important plant species according to the quantitative data analysis are *Cassia sophera*, *Centella asiatica*, *Cocos nucifera*, *Cucumis melo* var. *acidulus*, *Curcuma longa*, *Phoenix dactylifera* and *Syzygium aromaticum*.

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Introduction

Traditional herbal medicine is practiced in several parts of the world particularly where large ethnic tribes and communities live. India has a great history of traditional health care and home remedies make a part of traditional medicinal system. Home remedies are generally the sole knowledge of women folk inherited from one generation to the other. In Karnataka State, Uttara

Kannada district has several ethnic communities and many people have already documented the traditional medicinal plants (1-8). Havyak community in the villages of Uttara Kannada district is one such community having sound traditional knowledge. The grandmothers of this community are treasure house of traditional medicinal knowledge as they have passed through a time when modern facilities were not available in

the remote villages of the district. These grandmothers strongly believed that prevention is better than cure, a basic principle of Ayurveda.

Child birth is one of the important events in the life of women and is considered to be a rebirth for the mother. In rural areas when

modern hospital facilities with proper drugs were not available in the past, traditional medicines would have served a number of women. Although traditional medicine in the field of mother and child health care is widely practicing in India, there are limited documentations are available

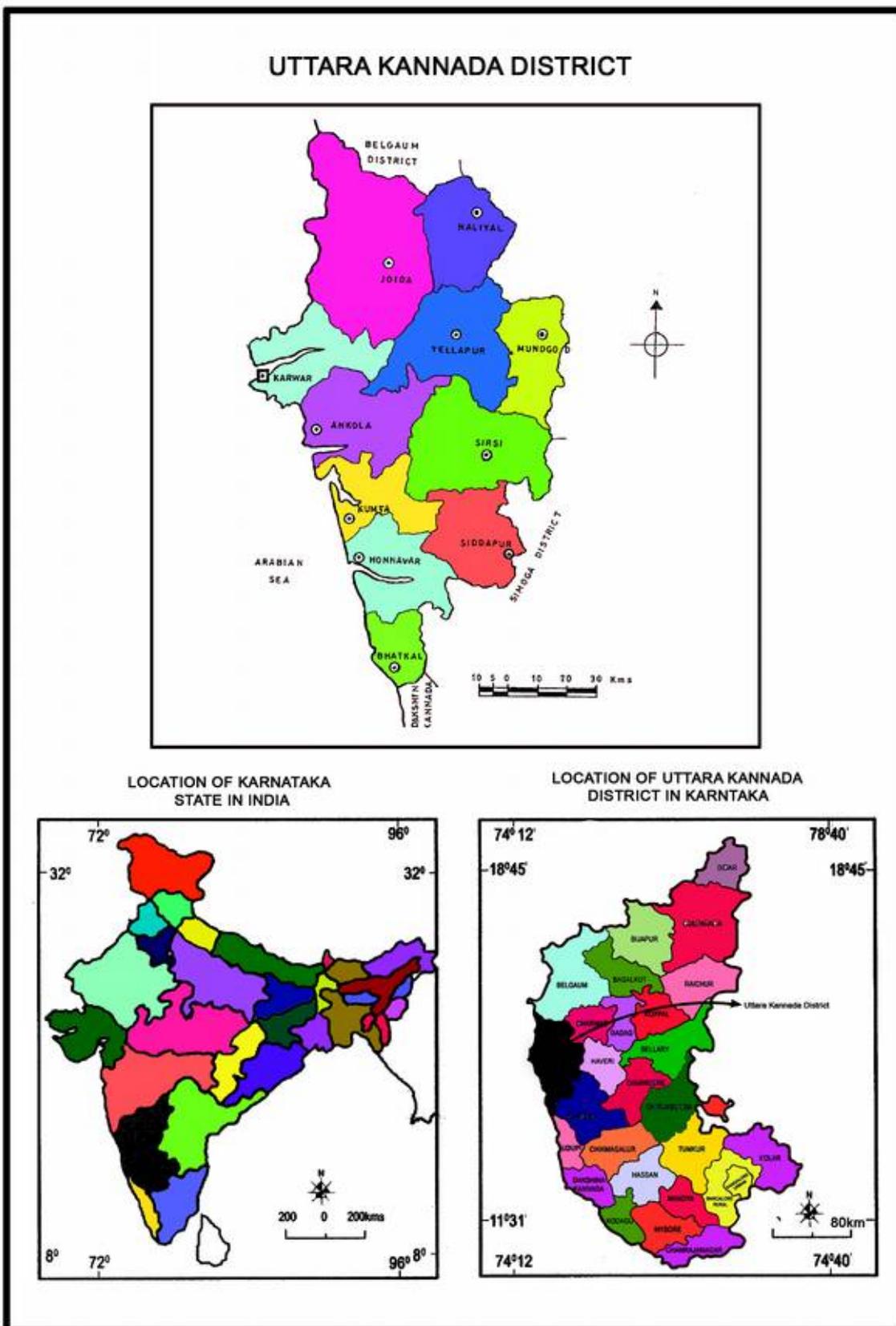


Fig. 1. Location of Uttara Kannada district in India

about the therapeutic uses, drug preparations and administration methods of traditional formulations (9). Information about the use of medicinal plants is usually communicated orally from generation to generation and this information is at high risk of disappearing (5). Therefore, keeping in consideration of these things, the current study was designed to document the valuable knowledge from grandmothers in Havyak community of three taluks of Uttara Kannada district in the field of mother and child care.

Materials and Methods

Study area

Uttara Kannada, one of the thickly forested districts of Karnataka state, extends between 13° 55' 15" 31' N latitude and 74° 09' 75" 04' E longitude. Total area of the district is 10,291 km² of which more than 80% constitutes part of Central Western Ghats (Fig. 1). Present work is a part of the extensive ethnobotanical survey being conducted since 2016 among grandmothers of Havyak community. The Havyak community, being chiefly areca nut growers, inhabited the forest area where infrastructures such as road, electricity, telephone facilities were not available recently. Most of the villages used to be islands for 3-4 months during the monsoon period. Any pregnant women would have been under the care of elderly people of the family who had the inherited knowledge of herbal remedies. Information about such homemade remedies for pre and postnatal mother care are collected from elderly women in Sirsi, Siddapura and Mundgod taluks of Uttara Kannada district. Elderly women above 65 years of age having the experience of more than 25 years are considered as informants.

Informants' interviews and ethnomedicinal data collection

The collection of information was through semi-structured open ended interviews with questionnaire (10). Aim and objectives of the study were explained to informants in local Kannada language and data have been collected with prior consent. The objective of the study was explained to the healers. Information was collected in the local Kannada language and then translated to English. The consent of the informants was taken to share their knowledge about the plants they use to cure the diseases and then their experience in the field of treatment, causes and symptoms of the ailments they treat, average number of patients they treat per week, vernacular names, parts of the plants used and other ingredients added during the drug formulations were noted down. During the survey, depending on the convenience of the practitioner, guided field walk method was followed. A walk through the forest with the healers allowed for both confirmations of the

medicinal plants they use for the treatment and the detailed information gathering. To get the consistent information on formulation each informant was interviewed more than twice and only those formulations having consistency are considered.

Collection of plants, identification and preparation of voucher specimens

The medicinal plants collected with the informants during guided field walk were authentically identified with the help of standard floras (11, 12) etc. The names of plant families were listed in alphabetic order. Scientific names of plant species were given according to the plant list (<http://www.theplantlist.org>) and the International Plant Name Index (IPNI: <http://www.ipni.org>). All medicinal plants recorded were photographed in the field, consequently the voucher specimens of all plants were prepared and deposited in the Museum, P.G. Department of Studies in Botany, Karnatak University, Dharwad for future reference (Shru/GRH/1-28).

Quantitative ethnobotanical data analysis

Use Value (UV)

The use value that demonstrates the relative importance of species known locally was calculated for each species was calculated using standard formula (13).

$$UV = \frac{\sum U_i}{N}$$

UV refers to the use value of species; U_i is the number of uses; N is the number of informants.

Relative frequency Citation (Rfc)

The most popular medicinal plants among the traditional practitioners for mother and child care can be identified through following formula (14)

Relative frequency of citation (%) =

$$\frac{\text{Frequency of citation}}{\sum \text{Frequency of citation of all species}} \times 100$$

Frequency of citation (%) =

$$\frac{\text{Number of informants who cited the medicinal plant}}{\text{Total number of informants interviewed}} \times 100$$

Family Importance Value (FIV)

Family importance value was calculated by taking the percentage of informants mentioning the family and was calculated using following formula:

$$FIV = \frac{FC}{N} \times 100$$

FC is the frequency of citation of the family; N is the number of informants participating in this study (15).

Results

Medicinal plants and their uses reported by the informants

Information was collected from 22 elderly women of the district. Data are presented in tables with botanical name, family, local name in Kannada language followed by the name of plants, parts used, mode of preparation, dose and purpose, literature reports for which it is used. The home remedies for pregnant women are in the form of paste, called "Lehya" in local language. Lehya is a semi-solid preparation of drugs, prepared with addition of jaggery, sugar or sugar-candy, ghee and boiled with prescribed medicinal plant juice or decoction. The herbal preparations included 15 lehya formulations for prenatal and postnatal care. Each formulation has 3 major ingredients. Ingredient I and II are mixture of different plant parts and prepared separately. These two ingredients are mixed with Ingredient III which contains single medicinal plant species. Ingredient III contains 15 plant species and is considered to classify the lehya into 15 different formulations. The components of 3 ingredients are given separately (Supplementary Tables 1-3).

Method of preparing 'Lehya' formulations

All the components of Ingredient I are finely ground, tied in a muslin cloth and dipped in a cup of boiling water to get decoction. This decoction is mixed with individual component of each formulations of Ingredient III, along with ghee, jaggery or sugar candy and boiled till it becomes semisolid. Components of Ingredient II are sliced or chopped, fried in ghee and added to the semisolid medium. In all, there are 15 formulations, where Ingredient I and Ingredient II are common. Lehya is recommended daily in specified quantity at early morning in empty stomach and at night after dinner. Traditional healers recommended 5 formulations each for prenatal, postnatal, for both pre and post natal care respectively.

Analysis of the data

The study revealed the use of 28 plant species belonging to 19 families which are used as components in lehya preparations. Habit-wise analysis of the plants indicates that herbs are highly used (35.71%) followed by climbers (28.57%) and trees (25.00%), while shrubs are less represented (10.71%) (Fig. 2). In most of the cases, fruits and seeds are frequently used plant parts for lehya preparations (Fig. 3). As indicated in Supplementary Table 1, UV is calculated for all the species. The plant species, *Cassia sophera* scored highest UV (0.77), followed by *Phoenix dactylifera*, *Syzygium aromaticum* (0.75 each), *Curcuma longa* (0.72) and *Cocos nucifera* (0.66). Plant with high UV is the indication of its importance in the traditional medicine practice as it is highly cited by many informants. Among the Relative frequency citation

calculation (Rfc) it was found that *Curcuma longa*, *Vitis vinifera*, *Centella asiatica* and *Cucumis melo* var. *acidulus* scored the highest value (4.58%) followed by *Prunus amygdalus*, *Cucurbita maxima*, *Anacardium occidentale* and *Piper longum* with 4.17% each (Supplementary Table 1). The most FIV values indicate the percentage of informants mentioning the plant families for the treatment of ailments. From the analysis it was found that Apiaceae, Cucurbitaceae, Leguminosae and Piperaceae are the dominant families with the FIV value 91.66%, followed by Anacardiaceae, Rosaceae and Zingiberaceae (83.33% each). The least FIV value was observed for Asparagaceae, Periplocaceae, Rubiaceae and Rutaceae (FIV=58.33% each) (Fig. 4).

Discussion

According to humoral medicine, pregnancy is considered to be the hot state of the body, during which parturition heat is lost and the mother attains cold state. Hence, during postpartum period a lot of care is needed to restore the health of mother to equilibrium (22). Common health problems in pregnancy and postpartum are bleeding, faintness, heartburn, itching, swollen ankles, vaginal discharge, tiredness, backache, pain in perineum, wound, sexual problems etc. Traditionally mothers are supplemented with proper diet to rejuvenate the health from vulnerable state and they are strengthened physically and mentally by restricting housework, journey, maintaining proper hygiene and abstaining sexual activity (23).

The formulations of medicinal plants play major role in pre and post natal care. The plants and their preparations included in diet therapy according to the need, health status and prakriti (vata, pitta and kapha). Believing this, prenatal care in traditional practice aimed at easy delivery and healthy child, whereas postnatal care is to recover mother's health after delivery. According to traditional practitioners lehya acts as energy booster and enhancer. Some formulations of Ingredient III starts from 1st month, 3rd month and 5th month and continued till 7th month of pregnancy to enhance the good health of child and mother and to have defense against diseases. Plants used in the Ingredient I are mainly spices, which increase the body temperature and are used both in pre and post natal stages to attain the equilibrium. Plants like *Centella asiatica*, *Trigonella foenum-graceum*, *Ixora coccinea*, *Cucumis melo* are coolants and used during hot state. After delivery, mother attains the cold state; hence the plants like *Citrus lemon*, *Cannabis sativa*, *Papaver somnifera* etc are used. According to the informants these plants raise the core body temperature, helping to stimulate the metabolism to burn the fat accumulated and in turn allows elimination of excess fluid from the body and

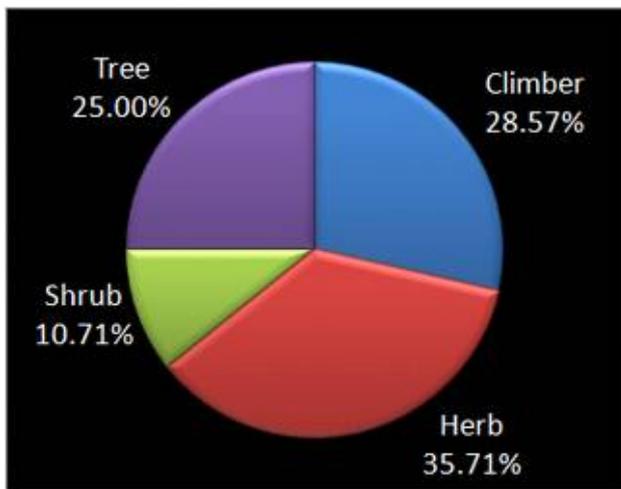


Fig. 2. Habit wise usage of the plants

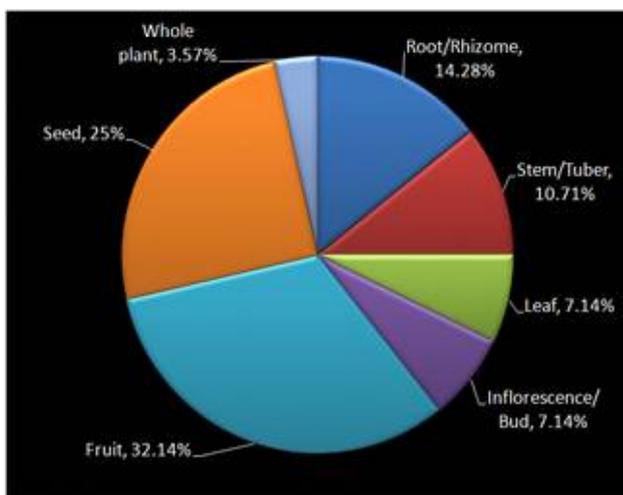


Fig. 3. Percentage of drug parts used for lehya preparation

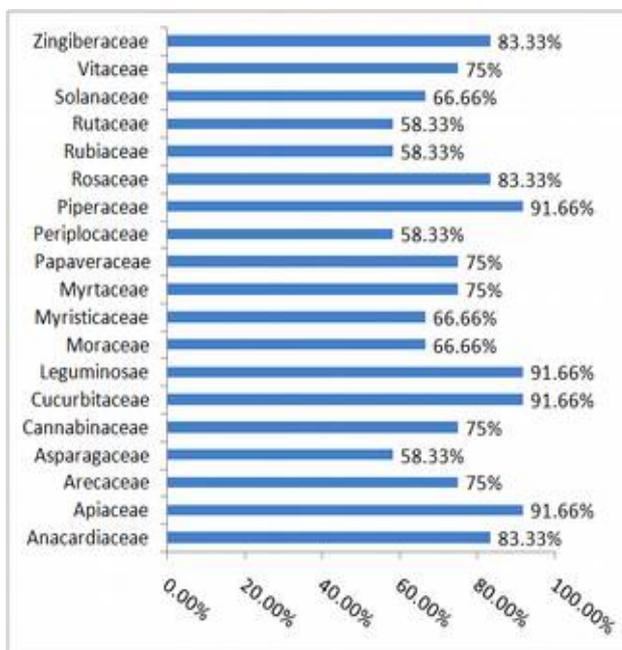


Fig. 4. Family importance value of the reported plants

maintains the equilibrium state. Sometime the formulations are prakriti (nature) based. Mother's

of pitta prakriti are said to avoid the formulation of *Cannabis sativa*, where narcotic activity of drug may induce more heat and triggers menstruation leading to anemic condition and prescribed to have *C. asiatica*, *I. coccinia* and *C. melo*. For vata prakriti *Trigonella foenum-graceum* is given to overcome body pain. The plants with coolant or refrigerant are not given to the patient with Kapha prakriti. Prakriti based treatment by traditional practitioners supports ayurvedic background.

Use of *Asparagus racemosus* tubers as galactagogue in ethno medicinal practices in Karnataka is also reported by many authors (1, 24-26). In Ayurveda it is being prescribed for urinary diseases, gynaecological disorder, hyper acidity, gastritis, as galactagogue and tonic (18). Tuber is used against body pain, swelling, abdominal and uterine pain, excessive bleeding, weakness and as a tonic along with 32 different herbs in the preparation of "battissa", to maintain hot state in mother (23). In Ayurveda *Cassia sophera* is used for constipation, diseases of vatam and as rejuvenator (18). In traditional practice this plant is also used for miscarriage, quick and easy delivery (27). Similarly *Centella asiatica* is used for smooth delivery and as a tonic (26). Root of *Hemidesmus indicus* as a galactagogue is in the traditional practice in Karnataka (28, 29). There is a mention of plants like *G. glabra*, *V. vinifera*, *C. asiatica*, *C. longa*, *Z. officinale*, *P. longum*, *P. nigrum* in Charaka Samhita for maintenance of pregnancy, cure anemia, pregnant xerostomia, galacto purifier, control chill, suppurated umbilicus, vitiation of milk and post prandial drink. *Z. officinale*, *P. longum*, *P. nigrum*, *V. vinifera* are used in a preparation of Bilvadi leha, Kutajava lehya, Ashwagandhi lehya, Mravikadi lehya, Laghu cincadika lehya for physical strength, rejuvenation, tiredness and vomiting in The Ayurvedic Formulary of India.

Conclusion

In the absence of proper medical facilities in the past, all the formulations were aimed at easy delivery, healthy baby and quick recovery of mother's health. All the 15 formulations for pre and postnatal care indicate these purposes. The information provided in the study is based exclusively on the practical experience of the informants, which may help in the future studies. Research focusing on the pharmacological mechanisms and the efficacy of these formulations could provide insights that could help to improve postpartum care.

Competing Interests

The authors have no competing interests.

Authors' contributions

SVH conducted the field visits and collected data from the informants. PB compiled the data, structured and carried out the research analysis of the work. GRH conceptualized the work plan, involved in designing the draft and approval of final manuscript.

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