



RESEARCH ARTICLE

Phytomedicines use for the management of perineal laceration among the Karbi tribe of Assam, India

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Abstract

Traditional medicines are the main source of primary healthcare of the Karbi tribe of Karbi Anglong district of Assam and therapeutic utilization of medicinal plants for management of perineal laceration were known since time immemorial. The present study aimed to highlight the phytotherapy for perineal laceration and its significance among the Karbi tribe. Data are collected from randomly selected areas of the district where practices of ethnomedicines for gynaecological issues are in common. Interview methods (unstructured and semi structured) were adopted followed by group discussions from 37 informants (Female =30; Male =7). Importance of the plant medicines among the tribes were quantitatively determined by using ethnobotanical indices viz. RFC (Relative Frequency of Citation), Fidelity Level (FL in %), Important Values (IVs) and Frequency of exploited plant part (F). The study revealed the use of 8 medicinal plants (7 genera with 8 species) belonging to 4 families in the management of perineal laceration. Most of the medicinal plants recorded in this study attained the highest RFC of 1 while two plants *Pogostemon benghalensis* (Burm. f.) Kuntze. and *Clerodendrum infortunatum* L. has the least RFC with 0.56 and 0.51 respectively. FL has 100% at the maximum which indicates that the recorded plant species are considered as most important for the treatment of particular ailment. Traditional birth attendant and elderly women play an important role in child birth and healing of perineal wound through applications of phytomedicines. Further, pharmacological analysis would help in discovery of important plant based pharmaceutical drugs.

Keywords: Karbi Tribe; Medicinal Plants; Perineal Laceration; Child Birth; Traditional Birth Attendant

1. Introduction

Phytotherapy uses preparations of medicines from plants such as maceration, infusions, decoctions, tinctures, fresh or fermented juices, and powders which are developed as herbal products for treatment of various ailments (Grigoriu et al., 2021). Plant extract in the form of traditional medicines are popular among the folk population mainly due to easy availability, cheap and affordable with lesser side effects. Many such products are used for management of gynaecological problem including parturition, postpartum ailments, birth control or even managing unintended pregnancy (Hedge et al., 2007; Buragohain, 2008). Traditional medicines have been reported as primary source of rural health care among the Karbi tribe in Assam mainly residing in majority in Karbi Anglong district (Phangcho, 2001; Teron et al., 2013). Management of gynaecological problem by using phytomedicines are popular among the Karbi tribe. Vaginal delivery is common among rural women and during which, the vagina or birth canal tends to stretch, thereby leading to wounds or laceration. Perineal laceration is a vaginal tearing or trauma on the perineum during child birth (Ramar and Grimes, 2023). The perineal laceration (wound) is managed through phytotherapy remedies among the rural folk. The Karbi women living in the remote villages are dependent on Traditional Birth Attendant (TBA) for child birth. TBAs are mostly elderly women, locally called a *sarpis* (Teron et al., 2011) and they have been reported to possess insightful knowledge and wisdom for performing safe delivery of child at home.

Previously, the reproductive health care of women through application of phytomedicines have been reported from various ethnic communities of India (Purkayastha, 2005; Vidyasagar, 2007; Hedge et al., 2007; Buragohain, 2008; Das et al., 2015; Balamurugan

et al., 2017; Surendran et al., 2023). A few studies about ethnomedicines pertaining to management of gynaecological disorder have been reported from Karbi tribe (Borthakur, 1976, 1981, 1997; Teron, 2011; Terangpi et al., 2014, 2021). Management of perineal laceration through phytotherapy remedies among the Karbi tribe was found to be least reported in scientific literature. Present study focused on applications of traditional phytomedicines used for healing the vaginal laceration among the Karbi women during child birth.

2. Material and method

2.1. Study area and data collection

Traditional methods of managing parturition and perineal laceration using phytotherapy remedies was surveyed during the year 2019 - 2023 in the remote and randomly selected areas of Karbi Anglong district (25°58'13.31''N and 92°35'42.96''E; 25°53'29.86''N and 92°29'16.36''E; 25°53'12.94''N and 93°26'58.84''E; 26°16'5.12''N and 93°42'34.59''E), India. Karbi Anglong is one of the largest hill districts located in the central Assam which is primarily dominated by Karbi ethnic community. The data were collected from randomly selected areas where ethnomedicinal practices were in common following unstructured and semi-structured questionnaires and open-ended group discussion method. A total of 37 informants belonging to the age group between 27-79 years were involved and Prior Informed Consent (PIC) were obtained from them for the interviewed. Among them, 30 informants were females while 7 were males. TBAs were mainly interviewed as they possess knowledge of traditional child birth and usage of medicinal plants for safe delivery of child at home.

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The information shared by the local informants were recorded and cross checked with other informants. Medicinal plant species used for the management of perineal laceration were collected from the community forest area with the help of the informants. The medicinal plant species collected were identified by consulting standard taxonomic literatures (Kanjalil et al., 1997, reprinted version; Sharma, 1997; Patiri and Borah, 2007) and the scientific name of the plants were authenticated with the latest accepted name of the plants (<https://powo.science.kew.org/> and worldfloraonline.org). Herbarium specimen was prepared as per standard method which were deposited in the herbarium of Department of Botany, Gauhati University, Guwahati and the accession number for the same were obtained. Importance of the medicinal plants use by the traditional birth attendants and herbalists of Karbi were quantitatively determined by using various indices like Relative Frequency of Citation (RFC), Fidelity Level (FL), IVs (Important Value) and Frequency (F) of the plant part harvested and used.

2.2. Demography of the informant and knowledge of utilization of medicinal plant

A total of 37 informants with different occupations were interviewed and out of which 12 of the informants were, exclusively birth attendants, 07 informants were males who used to accompany their female counterparts during child birth and assist in some ritualistic work. Most of the male informants interviewed were priest, charmer who are invited by the family member of woman to performed some ritual for safe delivery and the well-being of the mother and her child and to bestowed overall blessing and good fortune to the family. Most of the female informants were medicinal and wild plants gatherer having sound knowledge of medicinal plants utilized for the same purpose while few were elderly mothers who usually assist birth attendant during child delivery (Table 1). The lowest age group of informants interviewed were 27 years old while the highest age group informants interviewed were 79 years old.

Three informants of age 89, 97 and 102 were picked up as recommended by the village head, locally called *Rongasar*.

2.3. Quantification of ethnobotanical data using indices

In order to determine the importance of medicinal plants use for a particular ailment, following ethnobotanical indices were employed:

2.3.1. Relative frequency of citation (RFC)

Relative frequency of citation (Tardio, 2008) was obtained by dividing the frequency of citation (FC) (the number of informants reporting the use of species) by the total number of informants participating in the survey (N).

$$RFC = FC/N$$

2.3.2. Fidelity Level (FL)

The FL was employed to determine the most important plant species used for treating certain diseases by the local herbal practitioners and elderly people living in the study area (Alexiades, 1996). The FL was calculated using the following formula:

$$FL (\%) = N_p/N \times 100$$

Where NP is the number of informants that mentioned the specific plant species used to treat certain ailments, and N is the total number of the informants who utilized the plants as medicine for treating any given ailment.

2.3.3. Importance Values (IVs)

Important Values (Byg and Balslev, 2001) measures the proportion of informants who regard a species as the most important. It is calculated as: $IVs = nis/n$

Where, nis= No. of informants who considers the species important; n= total no. of informants.

2.3.4. Frequency of exploited plant parts (F)

The frequency of the plant parts harvest (F) was evaluated through the response rate by type of plant part harvested by using the formula (Dembele, 2015):

$$F = S/N \times 100 \text{ where}$$

S: the number of informants who responded positively to use a plant part;

N: the total number of informants.

F=0 indicates that the plant part is not used; F is 100 when the part is used by all informants.

3. Result and discussion

Medicinal plants commonly available in their vicinity were used for treatment of perineal laceration caused during childbirth. A total of 08 medicinal plants belonging to 07 genera and 04 families were reported to be use in management of perineal laceration. Botanical names, part use and mode of use of the phytomedicines are presented in Table 2. The majority of the informants interviewed were in agreement with efficacy of the ethnomedicinal plants used for the management of perineal laceration after child birth. Tender twigs, leaves and rhizome were the important plant parts used for the treatment of the perineal laceration. Raw extract and topical application were the preferred mode of medication. One plant species, namely, *Pogostemon benghalensis* (Burm.f.) Kuntze. was used as vegetables which was reported to have therapeutic effect, providing strength and stamina to the mother with perineal laceration. *Curcuma* species were reported to provide a cooling effect during healing of wound. During the course of healing of vaginal wounds, itching and allergy tend to develop which seem to be unbearable for some women. To reduce the itching, some women applied baked leaves of *Clerodendrum infortunatum* L., in warm state which are continued till the condition is under control. Among the reported medicinal plant species, *Chromolaena odorata* (L.) R.M. King & H. Rob., *Curcuma longa* L., *Paederia foetida* L. and *Mikania micrantha* Kunth were abundantly available and are easily accessible for immediate utilization. However, the choice of selection of phytomedicines depends on the availability of plant in their locality as well as efficacy provided by the plants. Preferences and importance of phytomedicines were quantitatively determined which is presented in Table 3. Two plants species, namely, *Pogostemon benghalensis* (Burm. f.) Kuntze. and *Clerodendrum infortunatum* L., has showed least RFC with 0.56 and 0.51 while most of the plant species has RFC of 1 respectively which indicates the importance of the plant species. The FL was employed to determine the most important medicinal plant species used for treating certain diseases by the local herbal practitioners and elderly people living in the study area (Alexiades, et al., 1996). The study shows that the recorded plant species were considered as most important since it has demonstrated maximum FL value of 100. The important value (IVs) of all the recorded plant species has been reported to be 1 which implies importance of the medicinal plant species used for multiple purposes along with treatment of particular ailment.

In most rural areas, child deliveries are normally done at home with the assistance of TBAs who assist women during normal delivery of her child. They also give emotional and moral support before and after parturition. In the absence of modern health care centre in the rural locality, pregnant women have to depend on traditional birth attendants and while some women preferred vaginal delivery at home despite the presence of healthcare facilities. Majority of the women and some expecting mothers reported that they feel safe and comfortable to deliver child with the assistance of TBAs. TBAs were exclusively women, mostly the elderly menopause women who have the experience and knowledge in managing pregnancy and other female related health issue (Terangpi et al., 2014). Present study has established constant dependency of rural folk on phytomedicines for management of perineal laceration developed during post-delivery of child in some women. After normal delivery, most woman experienced trauma since the perineum tear is painful and bring discomfort to the woman. However, the birth attendant and other elderly women provide psychological and physical support. The perineal laceration is generally cleaned regularly using lukewarm water, allow it to dry and apply extracts of phytomedicines. Although, wounds or laceration tend to heals naturally but the application of phytomedicines accelerates the natural healing process without side effect. Parisa et al (2021), have reported that due to presence of flavonoid content, *Sonchus arvensis* L. play role in suppressing the inflammatory process. All the medicinal plant reported in the present study were found to be use individually; preferences of the application of plants medicines depend on the local availability or as prescribed by the local traditional healers. Quantification of data using certain indices explains the level of importance of medicinal plant species found in



Figure 1A. *Curcuma aromatica* Salisb. [Zingiberaceae]; **B.** Rhizome of *Curcuma aromatica* Salisb.; **C.** Rhizome of *Curcuma longa* L. [Zingiberaceae]; **D.** *Mikania micrantha* L. [Asteraceae] and its inflorescence; **E.** *Clerodendrum infortunatum* L. [Lamiaceae]; **F.** *Chromolaena odorata* (L.) R.M. King & H. Rob. [Asteraceae] and its inflorescence; **G.** *Paederia foetida* L. [Rubiaceae].

their locality for management of particular ailment. Most of the phytomedicines reported in the present study have been reported to have demonstrated pharmacological potentialities. *Curcuma* sp. has been reported to have potent wound healing and anti-inflammatory properties (Akbi, 2014; Jurenka, 2009); *Mikania micrantha* was reported as potential wound healing agent (Sumantri et al., 2021; Das et al., 2023) while *Paederia foetida* L. has been reported as anti-ulcer and anti-inflammatory agents (Das et al., 2013; Sharma et al., 2023).

4. Conclusion

The study revealed that traditional birth attendants play a crucial role in ensuring safe delivery of child at home in Karbi society while the traditional healers play a key role in effective management of perineal laceration of women after childbirth. The study shows that the traditional healers and birth attendant are exclusively working on for the well-being of the society and have rich traditional knowledge on the identification and usage of potential medicinal plants for reproductive health care. It also represents the age old believe and practices about herbal remedies which constitute an important and effective component of the healthcare system. Documentation of the use of the phytomedicines for perineal laceration would help in conservation of traditional knowledge and enriched the repositories

of traditional medicines. The healing properties of these medicinal plants are attributed to its bioactive phytochemicals. Hence further pharmacological analysis would help in discovery of important plant based pharmaceutical drugs.

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Contribution of the authors

First author, Reena Terangpi contributed in the research design, data collection, and identification of plant; analyzed the data, interpretation and cross-checked the data and drafting of the manuscript; Second author, Dwimu Basumatary, assisted in collection and processing of the plant specimens; Third author, Farishta Yasmin involved in overall improvement and cross checking of the manuscript. All authors read and approved the final manuscript.

Conflict of interest

The authors declared that there is no conflict of interest.

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Table 1. Informant Demographic characteristics

Population characteristics		No of participants (n=37)	Percentage of participants (%)
Genders	Female	30	81.08 %
	Male	7	18.91 %
Age in years	27-45	6	16.21 %
	46-70	20	54.05 %
	>70	11	29.72%
Occupations	Farmers	6	16.21 %
	Housewives	6	16.21 %
	Vegetables vendors	5	13.51 %
	Medicinal plant gatherers	4	10.81 %
	Charmers/Healers/Local priest	4	10.81 %
	Birth attendant	12	32.43 %

Table 2. Medicinal plants used for perineal laceration.

S.No	Botanical Name, Family, Vernacular Name/Accession No.		Traditional Usage	Other use reports
1	<i>Sonchus arvensis</i> L. [Asteraceae], <i>Chulumpui</i> (RTBOT30)	Tender leaves	Leaf extract is applied on wound with the help of quill	Anti-inflammatory (Parisa et al., 2021).
2	<i>Chromolaena odorata</i> (L.) R.M. King & H. Rob. [Asteraceae], <i>Bap bongnai</i> (GUBH20558)	Tender twigs	Twigs extract or paste applied locally on the wound	Active wound healing (Sirinthipaporn, 2017)
3	<i>Pogostemon benghalensis</i> (Burm.f.) Kuntze. (Lamiaceae), <i>Hanbipo</i> (RTBOT28)	Tender twigs	Extract applied locally on the wound	Antipyretic, Antinociceptic, Anti-inflammatory (Aryal et al., 2019).
4	<i>Mikania micrantha</i> Kunth [Asteraceae], <i>Bapbongnai phulok</i> (GUBH20556)	Tender twigs	Extract applied locally on the laceration	Active wound healing properties (Sumantri et al., 2021).
5	<i>Curcuma aromatic</i> Salisb. [Zingiberaceae], <i>Habit Tharmit</i> (RTBOT29)	Fresh rhizome	Fresh rhizome is grounded into paste and applied on the laceration for a cooling effect	Wound healing activity (Kumar, 2009).
6	<i>Curcuma longa</i> L. [Zingiberaceae], <i>Tharmit keme</i> (RTBOT31)	Fresh rhizome	Fresh ground rhizome applied on the laceration	Anti-microbial, Anti-inflammatory (Tejada et al., 2016)
7	<i>Clerodendrum infortunatum</i> L. [Lamiaceae], <i>Mahar alosam</i> (RTBOT27)	Leaves	Baked leaves applied on healing wound to stable itchiness	Wound healing activities (Gouthamchandra et al., 2010)
8	<i>Paederia foetida</i> L. [Rubiaceae], <i>Rikangnemthu</i> (GUBH20622)	Tender twigs and trailing stem	Extract applied locally on the wound	Anti-inflammatory (Das, 2013); Trailing stem used as abortifacient (Terangpi, 2021)

Table 3. Quantitative estimation of medicinal plants.

SN	Botanical Name	Parts used	RFC	FL (%)	IVs	F
1	<i>Sonchus arvensis</i> L.	Tender leaves	1	100	1	100
2	<i>Chromolaena odorata</i> (L.) R.M. King & H. Rob.	Tender twigs	1	100	1	100
3	<i>Pogostemon benghalensis</i> (Burm.f.) Kuntze	Tender twigs	0.56	100	1	56
4	<i>Mikania micrantha</i> L.	Tender twigs	1	100	1	100
5	<i>Curcuma aromatica</i> Salisb.	Rhizome	1	100	1	100
6	<i>Curcuma longa</i> L.	Rhizome	1	100	1	100
7	<i>Clerodendrum infortunatum</i> L.	Leaves	0.51	78	1	51
8	<i>Paederia foetida</i> L.	Tender twigs	1	100	1	100

RFC=Relative frequency of citation; FL=Fidelity Level; IVs= Important Values; F= Frequency of Exploited plant parts

