



TRADITIONAL MEDICINAL KNOWLEDGE: ANSWER TO THE POST-PARTUM HEALTHCARE NEEDS OF THE TRIBES OF CHHATTISGARH

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ABSTRACT

Traditional medicinal practices based on the use of plants account for about 85% of the primary healthcare derived globally. The gradual disappearance of the traditional practices has raised concerns, especially in the remote parts of the world, in the current scenario where the ecosystem and culture are under constant threat due to the development. The objective of this paper is revitalization of the traditional medicinal knowledge in context of the post-partum healthcare needs of the women in the Chhattisgarh state of India. The health indicators discussed show a dismal picture with the maternal mortality ratio and infant mortality ratio being alarmingly high at 275 and 52, respectively, much below the national average and unsatisfactory. This review aims to provide an overview of how medicinal plants in this area are utilized, creating the much needed critical awareness on the available traditional medicinal knowledge, folk medicines and practices that are used or can be used for the post-partum care and asserting the importance of the knowledge being passed on from one generation to the other, while providing a solution to address the post-natal health concerns by proposing suggestions for further research.

KEY WORDS: Traditional Knowledge, Post partum healthcare, medicinal plants, bioactive compounds



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INTRODUCTION

Traditional medicinal practices based on the use of plants account for about 85% of the primary healthcare derived globally. The plant species used around the world for medicinal purposes as listed by the World Health Organization are over 21,000 from which around 2500 species of such plants, belonging to 100 genera are found in India.¹ These plants majorly belong to about 158 higher flowering families and are being used in Indigenous systems of Medicine, positioning India tenth in the list of plant rich countries of the world.² The gradual disappearance of the traditional culture due to the development and related factors has led to the loss of wealth of this knowledge. This has raised concerns, especially in the remote parts of the world, in the current scenario where the ecosystem and culture are under constant threat due to the development. The rich history, culture, mythology and related folklore of the Chhattisgarh region have been transcended and relayed from one generation to the other. Ethnobotanical surveys help gain the valuable information about indigenous methods and plants as a cure to different ailments. In order to record such information personal interviews and field visits with the inhabitants of the particular region act as tools and the ethnobotanical studies have hence gained medical importance.³ There are valuable regional records of indigenous plants to treat different ailments including plants used by primitive people to affect fertility, conception and abortion, obstetrics, gynecological disorders, influenza, leucoderma, leucorrhoea, leprosy, skin diseases, rheumatism and infectious diseases.⁴ The documentation of such indigenous knowledge and practices by collecting the data from various sources and are analyzed in order to show the differences and similarities in the use and treatment behavior adopted by various tribes of Chhattisgarh for curing post-partum disorders, aims to promote the integration of traditional knowledge with modern day healthcare needs and present a natural solution to the post-natal healthcare problems. The population density of Chhattisgarh is 154 per sq. km. as against the national average of 312 and is ranked at the 16th of the most-populated state of the nation. Tribes constitute for the one-third of the population and more than half of the 27 districts of the state have been classified as remote, tribal, and extremist affected areas.⁵ The state currently faces several challenges including newer public health challenge i.e. the escalation of burden of chronic non communicable diseases leading to their transition epidemic. Environmental factors and climate changes also have an impact on the disease patterns. Consequently, greater interventions are required to address the ongoing problems of maternal and child mortality, HIV/AIDS and other communicable diseases from the already overburdened health systems. The aim of this article is to review the scenario of Chhattisgarh and suggest how the traditional medicinal knowledge can provide the much needed and looked for answer to the post partum healthcare needs.⁶ According to the population Annual Health Survey [AHS] 2011-2012, the crude birth rate in Chhattisgarh is 23.5 per 1000. From a public health point of view, most of the health indicators relating to health as well as healthcare delivery are

unsatisfactory and below national average. Putting these together and projecting them in a public health view point encourages others to focus on the neglected areas. There is a dearth of professional health care providers in the state and the problem is compounded further by the factors like human resources gap, poor physical infrastructure, inadequate health awareness, poor health-seeking behavior, and insufficient healthcare utilization.⁷ There is poor community participation in public health interventions carried out by the government and the reasons for which are still to be unearthed. Chhattisgarh lags behind the country as a whole on several socioeconomic and health indicators reflecting the dire need for improving access to public health services. There is also need for further research to generate the baseline data and to identify the contributing determinants for the current public health scenario such that the curative steps can accordingly be taken by the governmental and nongovernmental agencies.⁸ Traditional knowledge and its continuous use has helped to maintain the ecological balance and can act as the key to solutions for future researches and developments in the nutraceutical and pharmaceutical sectors of healthcare. Traditional health practices of the tribals are based on plants occurring in the forests of the region they dwell in; therefore, they have guarded the biodiversity of the area and have an instrumental role in conserving several important plant species.⁹ But the increase in the emphasis on herbal medicine all over the world, has led to unsustainable harvesting of the naturally occurring medicinal plants to the extent that several species are now threatened and nearing extinction. In India the prevalence of gynecological disorders are alarming in situation at present. Due to the social stigma attached, women tend to not share their disorders as freely as with the herbal healers.¹¹ The herbal healers treat these disorders using the plants which have extensive medicinal potentiality. An attempt has been made to collect the information on the traditional medicinal plants used for the treatment of gynecological diseases by the tribes of Chhattisgarh. The present study is unique as it has attempted to show the medicinal practices of different tribes to compare the method of treatment with similarities and dissimilarities with respect to their ethnomedicinal practices.¹²

HEALTHCARE STATUS OF WOMEN IN CHHATTISGARH

The facts and figures below show the statistics of the Chhattisgarh, as noted in the Annual Health Survey, 2012-13. The statistics depict a very dismal picture of the health indicators of the women in the Chhattisgarh, specifically the women belonging to the rural parts of the state.¹⁵⁻¹⁷ The mean age at marriage among women is 18.9 years and for men it is 22.8 years which can be attributed to the trend of marrying off the girls at an early age in Chhattisgarh. Around 21.3% of women and 29.1% of men in Chhattisgarh marry before they reach their respective legal minimum age at marriage of 18 and 21 years.¹⁶ As per Annual Health Survey Statistics, 2011-2012, the crude birth rate is 23.5 per 1000 population (rural 24.4 and urban 20.2) and the crude death rate is 7.4 per 1000 population (rural 7.8 and urban 6.0). The Maternal Mortality Rate of Chhattisgarh

is 275. Women in Chhattisgarh have an average of 2.6 children throughout their childbearing years, the median

age for first birth for women aged 25-49 years being 18.8years.¹⁷

Table 1
Reflects health indicators relating to marriage and fertility

Indicator	Chhattisgarh	
	Rural	Urban
Mean age for marriage of Boys	22.2 yrs	25.1yrs
Mean age for marriage of Girls	18.9 yrs	18.7 yrs
Mothers or pregnant women aged 15-19	16.5%	7.6%
Women having/ wanting more than 2 children	71.2%	87.2%

One of the most important facets of the Family Welfare Program initiated in the state has been the promotion of maternal and child health. Each pregnant woman should receive at least three antenatal care checkups a full course of iron and folic acid supplementation along with two tetanus toxoid injections and. In Chhattisgarh,

mothers of 79.6% of children had received at least one antenatal checkup (51.2% had three ANC), 37.9% of mothers consumed 100 tablets of iron and folic acid supplementation. Table 2 below compares the status of antenatal and postnatal care in the rural and urban state.

Table 2
Reflects indicators relating to antenatal and postnatal healthcare

Indicators	Chhattisgarh	
	Rural	Urban
Women who received Antenatal Care	77.7%	92.1%
Women who received institutional postnatal care	13.2%	48.4%
Women who received home post natal care	86.3%	51.3%
Women who received PNC within 2 weeks of delivery	38.0%	64.6%

The major determinant of health and well-being among women and children is the nutritional status. However, Nutritional deficiency is more prevalent in Chhattisgarh in rural areas and among SC and ST women and

illiterate women. Malnutrition and anemia are serious problems among women and present on a large scale in Chhattisgarh. The table below shows the prevalence of malnutrition and anemia in the Chhattisgarh state.

Table 3
Reflects indicators relating to health of the women in Chhattisgarh

Indicators	Chhattisgarh	
	Rural	Urban
Women with low Body Mass Index	45.7%	23.5%
Ever Married Women with anemia	59.4%	50.3%
Pregnant women who are anemic (age 15- 49 years)	62.7%	65.2%

The graphs below are indicators of the poor infant and child health. The infant mortality rate is 48 per 1000 live births, which is high in comparison to the other developed states of the country. The neonatal mortality rate is 35 per 1000 live births (rural, 37; urban, 29) and

under 5 the mortality rate is 61 per 1000 live births. Chhattisgarh has made some progress toward achieving MDGs over the last few years, but it has still a long way to go for achieving the millennium development goals.¹⁹

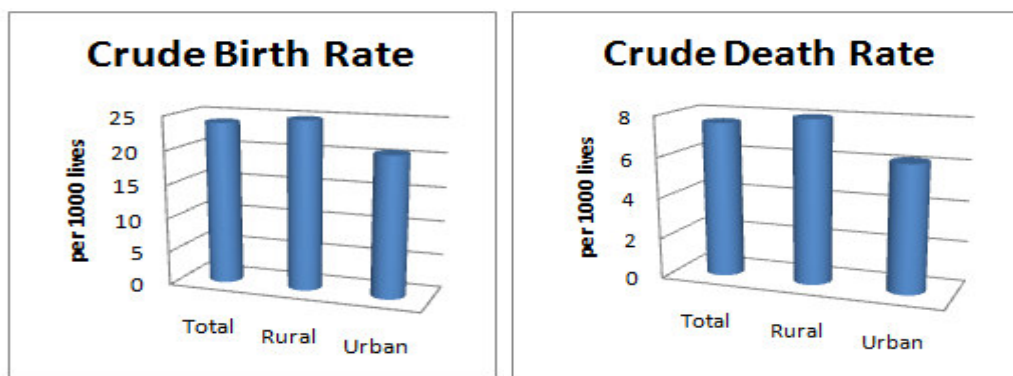


Figure 1
a) Graph depicting the Crude Birth Rate, 2012-13
b) Graph depicting the Crude Death Rate, 2012-13

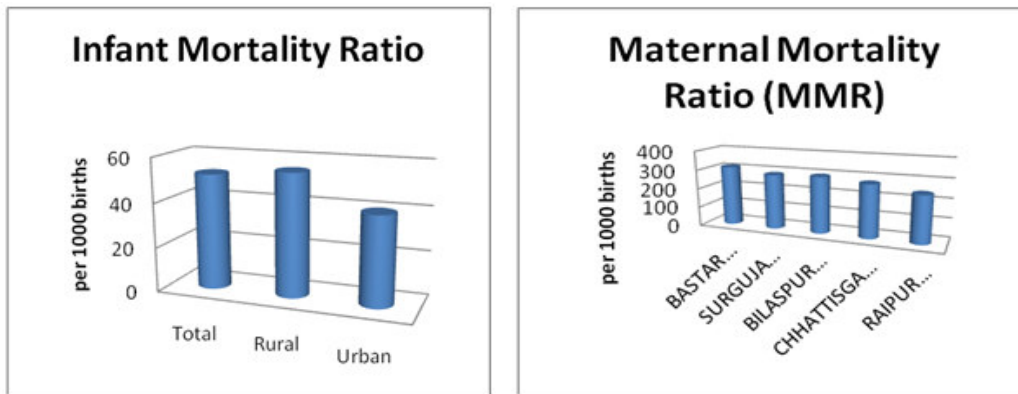


Figure 2

- a) Graph depicting the Infant Mortality Ratio, 2012-13
 b) Graph depicting the Maternal Mortality Ratio, 2012-13

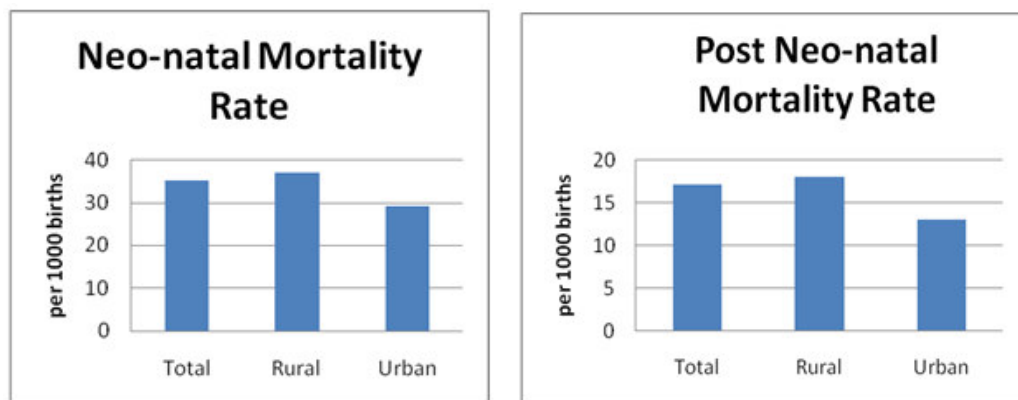


Figure 3

- a) Graph depicting the neo-natal mortality rate
 b) Graph depicting the Post neo-natal mortality rate, 2012-13

Table 4

The total number of female deaths vs. maternal deaths, 2012-13

Age Group	Sample Female Deaths	Maternal Deaths	Proportion
15-19	299	20	9
20-24	378	71	33
25-29	354	59	27
30-34	343	34	16
35-39	381	19	9
40-44	381	9	4
45-49	441	5	2
Total	2577	217	100

Table 5

Division-wise statistics of female population, live births and maternal deaths in Chhattisgarh

State/Commissionary/(Districts)	Sample Female Population	Sample Live Births	Maternal Deaths
CHHATTISGARH	317006	82584	217
SURGUJA DIVISION (Koriya , Surguja , Jashpur)	44180	12062	34
BILASPUR DIVISION (Raigarh , korba , Janjgir-Champa, Bilaspur)	92258	25948	72
RAIPUR DIVISION (Kawardha , Rajnandgaon , durg , Raipur , Mahasamund , dhamtan)	125099	32532	76
BASTAR DIVISION (Kanker , Bastar , Dantewada)	55469	12042	35

The health indicators clearly depict that Chhattisgarh lags behind the country. This could partly be due to factors such as supply-side gaps, poor physical infrastructure and the human resources gap which contribute to the dismal socioeconomic status of the state. In order to address the issue of poor health, a

critical need for improving the access to Public Health Service arises along with the identification of other specific contributing determinants responsible for the current public health scenario. Medicinal plants of Chhattisgarh state belong to 911 genera and 196 families. These include 14 taxa at subspecies level. The

medicinal plant species (taxa) found in the region are 1525 in total comprising of trees (294), shrubs (262), herbs (808) and climbers (161).²⁰ The ethnomedicinal data compiled has been collected from various sources and is analyzed to show the differences and similarities in the usage and treatment pattern adopted by the tribes of Chhattisgarh for curing gynecological disorders. The analysis reveals the local name of species, their

respective botanical names for identification, part of the plant used the method of treatment by different tribal healers and communities and the biologically active compounds isolated from these plants. This review has covered only the plants are used for the maternal healthcare and their respective isolated bioactive compounds.

Plants used for gynecological and reproductive problems in Chhattisgarh

S.No.	Disease	Tribes	Plant and Part Used	Method Of Preparation	Compound Isolation
1	Easy Delivery	Birhor	Local Name – Minjur chundi Botanical Name – <i>Elephantopus scaber</i> L. Family – Asteraceae Part used- Roots.	One glass full of decoction of root is given in labour pain.	Yam et al. (2009) investigated the analgesic effect of <i>Elephantopus tomentosus</i> , the ethanolic extract was assayed using the carrageenan induced paw oedema model, while the analgesic activity was analysed using the tail flick, hot plate and acetic acid induced writhing. The plant was observed to have significant analgesic and anti-inflammatory activity.
		Saora, Gond, Baiga, Maria, Bhumia, Agariya	Local Name -Chirchira Botanical Name <i>Achyranthes aspera</i> Family-Amaranthaceae Part used -Root.	Fresh and dried root is grinded and decoction is made with water and given to a pregnant women for relief in painful delivery. Half cup decoction is given once or twice at the time of delivery.	H. Kumar et al. (2009) reported the hydro alcoholic extract of the roots and leaves of <i>Achyranthes aspera</i> shows centrally acting analgesic activity in adult male albino rats using tail flick, hot plate and acetic acid induced writhing method for peripherally acting analgesic activity using aspirin as standard drug. The doses administered were 200 mg/kg and 400 mg/kg. The animal that administered a dose of 400 mg/kg leaf extract has shown the maximum analgesic activity. Neogi N et al. (1970) reported that achyranthine a water soluble alkaloid had a slight antipyretic activity in rats.
		Baiga	Local Name -Chirchira Botanical Name - <i>Achyranthes aspera</i> Family-Amaranthaceae Part used Stem	Small pieces of stem is used to make a necklace and worn round the neck of women to facilitate child birth.	Sutar N.G. et al. (2008) reported methanolic extract of leaves for analgesic and antipyretic activities by using hot plate and brewer's yeast induced methods using aspirin as a standard drug.
		Baiga, Agaria	Local Name - Sarpagandha Botanical name - <i>Rauwolfia serpentina</i> (Linn.) Family - Apocynaceae Part used – Root	The root is grounded to make a powder and 10 gram powder is taken which excites and invigorates the ovary to facilitate delivery.	K C Verma et al (2010), confirmed the presence of the alkaloids Reserpine and serpentine and identified them by Mayer's Test and Wagner's Test and Thin Layer Chromatography.
2	Delivery Problems	Tribes of South Bastar *	Local Name -Rasna Botanical Name <i>Blepharispermum subsessile</i> Family-Asteraceae Part used - Root	Not available.	Despite the reported high medicinal as well as market values, the pharmacognostical characters of its root are not reported till date. A jadhav (2015) et al have characterized the pharmacognostical and physico-chemical parameters of the root
		Baiga	Local Name -Chirchira Botanical Name - <i>Achyranthes aspera</i> Family-Amaranthaceae Part used -Whole plant	The decoction of whole plant is given to avoid painful delivery.	F.A. Mehta et al. (2009) studied the leaves and seeds of <i>Achyranthes aspera</i> which shows analgesic activity. Both leaves and seeds show analgesic activity in mice using acetic acid induced writhing response and hot plate method.
		Tribes of South Bastar * (Mahant, 2015)	Local Name –Bach Botanical Name <i>Acorus calamus</i> Family-Acoraceae Part used - Fresh Milk.	Not available.	Jayaraman et al.: Extracted the methanolic extract of <i>Acorus calamus</i> and further studied analgesic effect on the rat through the Writhing response and rat caudal immersion method while the anticonvulsant effect was studied through the Pentylene tetrazol-induced seizures method. The studies showed that <i>Acorus calamus</i> roots have significant anti-inflammatory and anticonvulsant activity.
3	Anaemia	Baiga	Local Name –Dumar Botanical – <i>Ficus carica</i> Family- Moraceae Part used -fruit	Tea spoon full of warm juice of ripe fruit.	S. Mawa et al (2013) reported that this plant commonly known as "Fig" is an excellent source of phenolic compounds, such as proanthocyanidins, with the level of phenolic compounds even higher than tea and red wine and hence antispasmodic and anti-inflammatory properties among others. ²⁴
4	Milk Secretion	Tribes of South Bastar	Local Name –Anantmul Botanical Name- <i>Hemidesmus indicus</i> Family-Asclepiadaceae Part Used –Root	Not available.	It has been recorded as one of the rasayana plants in the Ayurveda.
		Tribes of South Bastar	Local Name Satawri Botanical Name- <i>Asparagus racemosus</i> Family-Liliaceae Part Used-Fibre.	Not available.	In Ayurveda, it is considered both a general tonic and a female reproductive tonic and is known to increase female vitality and fertility. S Alok et al (2013) have recorded a number of pharmacological and phytochemistry characters, as studied, of the plant attributing to the health benefits, including the increased lactation.

	Birhor	Local Name - Dudhi Botanical Name - Euphorbia hirta Family – Euphorbiaceae Part used- Whole Plant.	Not available	S Kumar (2010) have recorded that various chemical investigation of <i>E. hirta</i> has led to the isolation of compounds like rutin (IV), quercetin (V), euphorbin-A (VI), euphorbin-B (VII), euphorbin-C (VIII), euphorbin-D (IX), 2,4,6-tri-O-galloyl-β-D-glucose, 1,3,4,6-tetra-O-galloyl-β-D-glucose, kaempferol, gallic acid, and protocatechuic acid. The root decoction of the herb has been reported to be beneficial for nursing mothers who are deficient in milk.	
5	Post Delivery vitality	Bijnhwar	Local Name Girola Botanical Name Indigofera cassioides Family- Fabaceae Part Used-Stem	Stem is sun dried and powdered.	The biological components of this plant are reported to have anti-nociceptive, anti-inflammatory (Raju et al, 2013), antimicrobial (Esimone et al, 1999) and antidiabetic (Narender et al, 2006) activities. M S Sandhyavali et al (2014) revealed two unknown compounds, 5-[(E)-2-(4-hydroxyphenyl) benzene-1,3-diol, and Gitoxin belonging to tannols and steroidal glycoside after the phytochemical screening and spectral analysis of the plant extracts.
		Birhor	Local Name- Kusum Botanical Name- Schleichera oleosa Family –Sapindaceae Part Used- oil.	Half a cup of oil given to the women after delivery, twice a day for 3 days as a tonic	As reported by N Meshram (2015) several studies have shown that the extracts from the plant have phenolics which show antioxidant properties, which protect the vital molecules in the body and help to generate metabolic energy. ³²

The data on the preferred medicinal plants for the treatment of various neo natal and post natal disorders were collected and analyzed. The utilization and enumeration of these have been described in the Table above. Saoras, Gonds, Baigas, Marias, Bhumias and Agariyas use Chirchira for easy delivery but the method of preparation differ. In the study conducted by Srivastava (2013) Baigas and Agariyas have been observed to use root of Sarpgandha to facilitate delivery while Birhors use Minjur Chundi in painful delivery. Tribes of south Bastar use Rasna for delivery problem. They also use fresh milk of Buch for the same problem. The Baigas use Chirchira for relief from painful delivery. Baigas treat Anaemia by the usage of Dumar. Bhatras, Gonds, Bijnhwar and Birhors use Dudhi for treatment of Leucorrhoea but Bijnhwar also use Ramdatoon. Baigas and Agariya of adjoining region of M.P. & C.G. use Palas but in the central part of Chhattisgarh Baigas use Babool bark with old brown sugar for the same problem. Tribes of south Bastar use Anantmul and Satawari, Gonds use Anantmul and Birhor use Dudhi for Milk secretion. For Onset of pregnancy tribes of south Bastar use Keokanda. For the post-delivery vitality Bijnhwar use Girola, Birhor use Kusum and Bhunjia use Kulthi. The active compounds show a wide range of biological activity against the problems faced by the women in the antenatal and postnatal stage. The secondary metabolites such as essential oils of the medicinal plants also show a variety of biological activities. The development of new maternal healthcare products is necessary in order to find more effective and less-toxic drugs that could provide a solution to the present postpartum health scenario.

DISCUSSION

As per the review of the healthcare status of the women of the region, the abundance of medicinal plants and the potential biologically active compounds present, the following suggestions are made to improve the present condition and achieve the better status of maternal healthcare and higher parities for women:

- Initiation of establishment of National policies aimed at overall development to give patients/consumers to have a choice and promotion of traditional medicinal

plants and practices and integration of the same in National Health Care Systems.

- Developing and adopting strategies, policies and operational methodologies for a balanced approach towards utilization of quality of raw materials, manufacturing processes leading to finished quality Traditional Medicines. Training programmes and establishment of network of laboratories on regional basis that study and analyse the biologically active compounds derived from the plants should be included as a part of the operational methodologies.
- It has been observed that for primary healthcare most of the tribal groups of Chhattisgarh prefer to use traditional medicines derived from plants. Therefore it is urgently required that the indigenous knowledge of the tribes related to herbs and plants and their medicinal use should be documented properly and disseminated through proper channels to larger number of people for their health benefits.³³
- Popularization of the indigenous medicinal practices and dissemination of the traditional knowledge, learned and practiced over the years, with the help of self-help groups is required to increase the awareness in the tribal women. Access to the healers and their services could play a pivotal role in the improvement of the healthcare and turn to be a solution to the postpartum health concerns of the tribal women.
- Government should focus not only on family planning programmes but also on other activities to increase women's age at marriage, address activities related to improving infant and child health programmes and increase girls' education to achieve sustainable and long-term fertility goals.

CONCLUSION

The lapse and loopholes in the maternal healthcare conditions may be attributed to the factors such as illiteracy rate and lack of education, failure of health system, lack of behaviour change, communication and health economics, and poor status of women play the predominant role and the administration needs to take concrete steps. The studies related to identification of the bioactive compounds and correlating them to their

biological activities can prove very useful for further research to explore the potential of medicinal plants as a source of therapeutic agents as solutions to the post-partum healthcare concerns. The traditional knowledge and medicinal practices of the tribes can be used for the benefit of the tribal as well as urban women, for the much needed drastic change.

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CONFLICT OF INTEREST

Conflict of interest declared none.

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