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Research Article

Traditional Knowledge on Plants Utilization in Postpartum Care: An Ethnobotanical Study in Local Community of Cimande, Bogor, West Java, Indonesia

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Abstract

An ethnobotanical study was conducted in five villages in the vicinity of Cimande Resort, Bogor, West Java, predominantly occupied by the Sundanese people. Forty-eight species of plants were recorded in their application in postpartum care and four species of plants in the care of the newborns. "Jamu Godogan" or boiled herbs, taken by mothers on day 8-15 after birth, contained most diverse herbs of 11 plants species. Three species (Curcuma longa, Piper betle, and Plectranthus scutellarioides) have more than two utilization categories. Nine out of 50 species of utilized medicinal plants have not been registered in the Indonesian Medicinal Plants Index and Medicinal Plants Dictionary; thus, new records.

Keywords: Bogor, Cimande, ethnobotany, medicinal plant, postpartum care, Sundanese

Introduction

Human beings desire a healthy, long and prosperous life. Efforts have been made to accomplish this, not limited to medication but also to include prevention, rehabilitation and upgrading the quality of life (Nala, 2007). Long before modern treatments were invented, every society had their own knowledge of finding cures and maintaining health (Wiart, 2006; Balangcod & Balangcod, 2011). This ability comes from hundreds of years of experience which have been passed down from their ancestors. Along with the process, they have learned to utilize every material from their surroundings, including flora, fauna and minerals. Indonesia is well known for its diversity in medicinal plants and their utilization in accordance with local cultures and traditions. In this regard, the country is nicknamed "the living laboratory" (Aisyah et al., 2011). This option of medicinal plants is recognized as herbs or herbal medicine by Westerners, whereas in

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Indonesia it is known as “jamu”, generally *jamu* tastes bitter (Riswan & Sangat-Roemantyo, 2002; Yadav, 2007). Nowadays, *jamu* has gained popularity due to better hygiene, and is consumed by the wider society (Anonymous, 2010; Tilaar et al., 2010). Postpartum care is a health indicator that affects education and economic capacity improvement. Most Indonesian women receive their first postpartum care at home (Fort et al., 2006). Although most are treated by trained health personnel, some are cared for by local midwives. The local midwives play a significant role in increasing the chances of mother and newborn survival. Many people in West Java still tend to use “dukun beranak” or “paraji” (midwife) service to assist childbirth and postpartum care (Rajab, 2009), including Cimande. It is known that medicinal plants are also used for postpartum care in West Java (Sangat et al., 2000). Cimande is located in West Java and and is directly adjacent to Gunung Gede Pangrango National Park, West Java. This research is aimed at gaining knowledge on medicinal plants used in postpartum care in Cimande, West Java, providing a strong foundation for further studies on their pharmacological and phytochemical properties. This supports efforts to meet requirements for traditional medicine raw materials as requested by the Ministry of Health.

Methods and Location of Study

Figure 1. Location of the study: Cimande Resort, Caringin District, Bogor Regency, West Java Province.

The focus of the research was Cimande resort forest area which administratively is included in the Caringin District, Bogor Regency, and West Java Province. This area is located at an altitude of 500 to 800 m above sea level. The villages located around the forest area include Pancawati Village, Cimande, Cileungsi, Lemah Duhur, and Cibeureum. Cimande village itself has long been known to foreigners as an area with traditional experts for alternative treatment for broken bones (Notosiswoyo, 1992; Suwandono & Suhardi, 2003). Majority of the population in these villages are of Sundanese tribe, they are Muslim and their main livelihood is farming.

Figure 2. An interview with village midwives.

Ethnobotany research data collection was according to Vogl et al. (2004), Suminguit (2005), and Nolan & Turner (2011) using a modification by nonstructural and open- ended-interview and direct observation in the field, such as observation of postpartum care activities by interviewees, etc. The interviews were directed at two “dukun beranak” or village midwives known locally as "paraji" or "mak berang"; it was also done to six women/families whose labour process was with the help of a mak berang. They were selected based on the criteria mentioned above. The plant species used in postpartum and infant care were recorded to obtain data on location, local names, parts used, preparation and treatment methods, and their benefits.

Plants with of unknown scientific names were sampled in the form of herbarium specimens with reference to Nesbitt (2014). Herbarium specimens were then

identified at the Herbarium Bogoriense, Research Center for Biology-LIPI. The data was then analyzed descriptively.

Results

Villagers in Cimande have access to modern health facilities such as Puskesmas/Primary Health Facility or hospitals; however, the role of dukun beranak to help the delivery process is still important. Some factors that influence this include strong local culture and tradition, the limited availability of modern facilities and medical personnel, and low income and education levels of local communities. Fifty plant species used in post-natal care were recorded; 4 of which are used for the care of a newborn (Table 1).

Some foods which are forbidden to be consumed during pregnancy include "cau" fruit or locally known as banana (*Musa* spp.), "Gedang" or papaya (*Carica papaya*), "waluh siyem" or siyem pumpkin (*Sechium edule*), "kulur" or kluwih (*Artocarpus altilis*), jackfruit (*A. heterophyllus*) and goat's meat. The use of medicinal plants in post-natal care can be single or a mixture of several species. During postnatal care, in addition to the use of different types of medicinal plants/jamu, women also receive a massage to all parts of the body on days 3, 7, 15, 30 and 40 after delivery. This massage aims to stimulate blood circulation to quickly restore body fitness.

Nine of the 50 plant species used in post-natal care -- *Amaranthus hybridus*, *Ficus sagittata*, *Lasianthus inodorus*, *Litsea robusta*, *Macaranga* cf. *triloba*, *Psophocarpus tetragonolobus*, *Selaginella plana*, *Vigna unguiculata* and *Vitis* sp. are not listed in the Dictionary of Medicinal Plants (Darwis & Majoindo, 1989) and the Indonesia Medicinal Plant Index (Anonymous, 1995); they are, therefore, new records of medicinal plant species to be added. Nevertheless, research on the potential utilization of these plant species as medicine has been carried out (Akubugwo et al., 2008; Hasan et al., 2016; Sihotang, 2011; Grosvenor et al., 1995; Roosita et al., 2008); Siddhuraju & Becker, 2007). None of the plants are listed in the IUCN Red List.

Table 1. Plants utilization for postpartum care and in a newborn in Cimande, Bogor, West Java

No.	Scientific Name	Family	Local Name	Parts used	Benefit
1.	*Allium cepa*	Amaryllidaceae	Bawang beureum	Tuber	"galogor" potion seasoning
2.	*Allium sativum*	Amaryllidaceae	Bawang bodas	Tuber	"galogor" potion seasoning
3.	*Amaranthus hybridus*	Amaranthaceae	Bayam	Leaves	Breast-milk stimulant
4.	*Arachis hypogaea*	Leguminosae	Suuk	Seed	"galogor" potion
5.	*Areca catechu*	Arecaceae	Jambe	Fruit	Birth control
6.	*Artocarpus heterophyllus*	Moraceae	Nangka	Leaves	To prevent swollen breasts
7.	*Begonia* spp.	Begoniaceae	Calincing	Leaves	Anti flatulence & febrifuge for infants
8.	*Blumea balsamifera*	Compositae	Sembung	Leaves	"godogan 8-15 hari" potion
9.	*Boesenbergia rotunda*	Zingiberaceae	Temu kunci	Rhizome	"godogan 8-15 hari" potion
10.	*Caesalpinia sappan*	Leguminosae	Secang	Flower	To cleanse infant's eyes
11.	*Capsicum annuum*	Solanaceae	Cabe beureum	Fruit	To restore uterus
12.	*Carica papaya*	Caricaceae	Gedang	Leaves, young fruit	Breast-milk stimulant
13.	*Centella asiatica*	Apiaceae	Antanan ageung	All parts	decoction until day 40
14.	*Citrus aurantiifolia*	Rutaceae	Jeruk nipis	Fruit	To shrink the stomach
15.	*Clitoria ternatea*	Leguminosae	Teleng	Flowers	To cleanse infant's eyes
16.	*Curcuma aeruginosa*	Zingiberaceae	Koneng hideung	Rhizome	Anti hemorraging agent
17.	*Curcuma longa*	Zingiberaceae	Koneng	Rhizome	Labor stimulant, "godogan 8-15 hari" potion, baby care
18.	*Curcuma* sp.	Zingiberaceae	Koneng tinggang	Rhizome	"pakinum atah" potion
19.	*Curcuma* sp.	Zingiberaceae	Koneng bodas	Rhizome	Potion for anti hemorraging
20.	*Curcuma zanthorrhiza*	Zingiberaceae	Koneng ageung	Rhizome	Labor stimulant
21.	*Cymbopogon nardus*	Poaceae	Sereh	Leaves	"godogan 8-15 hari"" potion
22.	*Elephantopus scaber*	Compositae	Tapak liman	All parts	"godogan s.d. 40 hari" potion
23.	*Etlingera elatior*	Zingiberaceae	Honje	Rhizome	Anti flatulence & febrifuge for infants
24.	*Ficus sagittata*	Moraceae	Ki rapat	Leaves	"godogan s.d. 40 hari" potion
25.	*Gnetum gnemon*	Gnetaceae	Tangkil	Leaves	To prevent swollen breasts
26.	*Hibiscus rosa-sinensis*	Malvaceae	Wera	Leaves	Labor stimulant
27.	*Kaempferia galanga*	Zingiberaceae	Cikur	Rhizome	"godogan 8-15 hari" potion, breast-milk stimulant

(Continue on next page)

Table 1. (Continued)

No.	Scientific Name	Family	Local Name	Parts used	Benefit
28.	*Lasianthus inodorus*	Rubiaceae	Kahitutan	Leaves	"pakinum atah" potion
29.	*Litsea robusta*	Lauraceae	Tangkalak	Leaves	Breast-milk stimulant
30.	*Macaranga* cf. *triloba*	Euphorbiaceae	Ki saat	Leaves	"godogan s.d. 40 hari" potion
31.	*Morinda citrifolia*	Rubiaceae	Cangkudu	Leaves	Potion "pakinum atah", to prevent headache
32.	*Moringa oleifera*	Moringaceae	Kelor	Leaves	Breast-milk stimulant
33.	*Oryza sativa*	Poaceae	Ketan hideung	Grain	Potion "galogor"
34.	*Rotheca serrata*	Lamiaceae	Singugu	Leaves	"pakinum atah" potion
35.	*Physalis minima*	Solanaceae	Cecenet	Young leaves	"godogan s.d. 40 hari" potion
36.	*Piper betle*	Piperaceae	Seureuh	Leaves	"godogan 8-15 hari" potion, antiseptic for vagina, potion for anti hemorraging
37.	*Plectranthus scutellarioides*	Lamiaceae	Jawer kotok	Leaves	"pakinum atah" potion , "godogan 8-15 hari" potion, vagina antiseptic, birth control, potion for anti hemorraging
38.	*Pluchea indica*	Compositae	Beluntas	Leaves	"pakinum atah" potion, "godogan 8-15 hari"
39.	*Psophocarpus tetragonolobus*	Leguminosae	Jaat	Seed	Potion "galogor"
40.	*Ricinus communis*	Euphorbiaceae	Jarak beureum	Seed	Birth control
41.	*Rubus rosifolius*	Rosaceae	Hareus	Leaves	"pakinum atah" potion, "godogan 8-15 hari" potion
42.	*Sauropus androgynus*	Phyllanthaceae	Katuk	Leaves	Breast-milk stimulant
43.	*Selaginella plana*	Selaginellaceae	Rane	Leaves	"pakinum atah" potion
44.	*Sesbania grandiflora*	Leguminosae	Gala-gala	Leaves	"godogan s.d. 40 hari" potion
45.	*Vigna radiata*	Leguminosae	Toge	Bean sprout Seed	To boost women's fertility, Potion "galogor"
46.	*Vigna unguiculata*	Leguminosae	Kacang panjang	Young fruit	To boost men's fertility
47.	*Vitis* sp.	Vitaceae	Bengbereuman	Leaves	"pakinum atah" potion
48.	*Zea mays*	Poaceae	Jagung	Seed	"galogor" potion
49.	*Zingiber montanum*	Zingiberaceae	Lempuyang	Rhizome	"godogan s.d. 40 hari" potion
50.	*Zingiber officinale*	Zingiberaceae	Jahe	Rhizome	"godogan 8-15 hari" potion, to tighten the vagina

Discussion

"Dukun beranak" or "paraji" is basically a midwife, aged over 40. They acquire their skills by observing, learning, assisting and practicing from their grandmothers who help the labour process. Initially, they used traditional tools during labour, for example, they used a bamboo slat to cut the umbilical cord. Recently the Ministry of Health trained these midwives to use more hygienic tools such as scissors, knife and stainless steel containers. It is expected with these tools, mother and baby will have a safer delivery process. In the research area, women start to consult the paraji in the eighth month of pregnancy.

According to the Paraji, the tradition of banning banana and papaya consumption is not only applied to pregnant women, but also to girls in the Sundanese tribe. Bananas and papaya for unmarried girls or women are believed to cause wet vaginal conditions. Whereas papaya contains enzyme papain, its derivatives the chymopapain enzymes has the ability to soften meat (Khare, 2007; Dewick, 2009; Lim, 2013) and could be harmful for the development of the fetus.

Abortifacient content (substances that cause abortion/miscarriage) in papaya is already recorded (Duke & Bogenschutz-Godwin, 2009). Abortifacient content in bananas has not been reported. The abstinence of eating banana heart during pregnancy prior to 9 months of pregnancy has been reported in the Kerinci community in Jambi (Handayani, 2010), but studies on banana's phytochemicals and biosciences in relation to pregnancy have never been conducted. In this regard, the practice is considered a myth. Kluwih fruit, jackfruit, durian (Khare, 2007), and goat's meat are known for their effect on blood circulation, thus could cause premature labour; in addition, consuming sweet potato tubers could cause flatulence. Further scientific studies about the above traditional restrictions need to be done, to clarify whether these are myths or not.

Research on the utilization of plants for postpartum care by the Sundanese ethnic group in some areas in West Java was conducted. In Pasir Eurih Village, Bogor 43 species were recorded (Setyowati-Indarto & Siagian, 1992); Sukaresmi Village, Bogor 37 species were recorded (Sunarti & Rahayu, 1997); Tapos Village, Bogor 15 species were recorded (Damayanti et al., 2002); in three villages around Gunung Halimun National Park 15 species were recorded (Rahayu & Harada, 2004); Tanjung Lame and Legon Pakis Village, Ujung Kulon-Banten 48 species were recorded (Rahayu et al., 2011). One of the most common plant species used for postpartum care is "katuk" (*Sauropus androgynus)* for

increasing breast milk production during lactation. However, the use of plants for newborn care has never been done.

The use of jackfruit leaves (*A. heterophyllus)*, "bengbereuman" leaves (*Vitis* sp.), "wera" leaves (*Hibiscus rosa-sinensis*), "tangkalak" leaves (*Litsea robusta*), "jarak beurum" seeds (*Ricinus communis*), "tangkil" leaves (*Gnetum gnemon*), and "hareus" (*Rubus rosiifolius*) in postpartum care has not been previously reported.

The use of medicinal herbs for postpartum care is divided into several stages depending on the time/day after delivery: Jamu of "pakinum atah" is consumed after 1-7 days of delivery. “Pakinum atah” is a drink made from fine pieces of several medicinal plants brewed with hot water then filtered. Jamu "godogan" potion is taken in the period of 8-15 days. Jamu "godogan" is taken from days 16 to 40. “Godogan” is a drink derived from several species of plants that are cooked in water until it boils and eventually only half of the water remains. The potion of "galogor" is eaten as a light meal while breastfeeding. “Galogor” is a snack made of several kinds of crushed grain fried without oil and given spices. Some plant species can be used alone/single, for example “kelor” leaves (*Moringa oleifera*), “katuk” (*Sauropus androgynus*), jackfruit, "cangkudu" (*Morinda citrifolia*), "tangkalak", jambe (*Areca catechu*), and “jarak beureum” (*Ricinus communis)* (Table 1). The utilization of herbs in postpartum care aims to soothe pain during vaginal bleeding and discharge and eliminate odour, to close the wound and restore or shrink the condition of the uterus and vagina, to prevent headaches, to improve blood circulation and to speed up body fitness.

Figure 3. "Katuk" (*Sauropus androgynus*).

Plants consumed as dishes such as daun kelor and katuk and "galogor" are used to boost breast-milk. Fine crushed of leaves of "tangkalak" (*Litsea robusta*), "tangkil" (*Gnetum gnemon*), or jackfruit (*A. heterophyllus*) are pasted and placed to the breast during the non-breastfeeding period to prevent swelling.

Stewed water, dried fine crushed or sliced jambe nut (*Area cathechu*), and dried "jarak beureum" (*Ricinus communis*) consumption is intended as birth control. The application of "jambe nut" or "pinang" as a natural anti-pregnancy agent has long been practiced in India (Shrestha et al., 2010; Bala et al., 2014). Traditionally in Indonesia, the use of pinang as birth control drug has long been practiced by the Sasak ethnic group in Lombok, Nusa Tenggara Barat (Rahayu et al., 2002). Pinang in Indonesia is found across the country, from Aceh to Papua (Dransfied & Backer, 2006a, 2006b; Dransfields, et al., 2006) and used as a complementary ingredient in the tradition of "makan sirih" or "betel chewing" commonly found in the Asia Pacific region (Anonymous, 2012), it is a well preserved Austronesia tradition until now.

Each 100 gram of jambe contains 21-30 grams of water, 5 to 8 grams of protein, 35 to 40 grams of carbohydrates, 5-10 grams of fat, 11 to 15 grams of fiber and 11 - 18 grams of polyphenols. Alkaloid content is low but significant; one of the eight alkaloid compounds that play an important role is *arecolin*. It is also

reported that these compounds contribute in raising blood pressure, liver function, increasing the use of glucose in the brain, and improving the function of consciousness in people with Alzeimer's disease (Brotonegoro et al., 2000; Anonymous, 2012).

A mixture of finely grinded "wera" leaves (*Hibiscus rosa-sinensis*), the "Koneng-ageng" rhizome (*Curcuma zanthorriza*) and chicken eggs are used as a labour stimulant. Flowers of *Hibiscus rosa-sinensis* are widely used in the treatment of diabetes (lowering blood sugar levels), anti-diarrhea, and reducing excessive vaginal fluids and urine; the benzene extracted from the flower is known to cause miscarriage (Khare, 2007). The leaves are also known to have similar property (Dasuki, 2001).

The importance of the genus *Curcuma*, including *C. zanthorriza*, in traditional medication is well documented (Duke, 2003; Ramadevi et al., 2007; Skornickova et al., 2007). Its role especially during childbirth, postpartum care and blood circulation is associated with the enzyme content of curcumin and its derivatives. Local name of "ki rapat" in Indonesia generally refers to *Parameria laevigata* (Kamiya et al., 2001); however the Sundanese in Cimande use the same name for *Ficus sagittata*. These two plants which came from two different genera are used for the same purpose, that is to tighten the vagina and uterus after birth. Research on the phytochemical content of *P. laevigata* has been conducted by Kamiya et al. (2001) and van Valkenburg (2001). Similar research by Rojo et al. (1999) showed narcotic compound in *F. sagittata* leaves.

The traditional use of "antanan ageung" leaves (*Centella asiatica*) by the Sundanese in Cimande as a "blood purifier" in post partum care is not unusual (Priyadi, et al., 2010), as the plant is widely used by communities across the Pacific side of Austronesia (Wiart, 2006). It is known to contain the enzyme *asiaticosides,* which acts as a blood purifier (Khare, 2007; Soerahso et al., 1992). In addition, it also contains anti bacterial agent of *citroneal*, *linalool*, *neral*, *mentol*, *linaol acetat*, and *sitronelil acetal* (Sait et al., 1992; Khare, 2007).

Data analysis showes that the rhizome of "koneng" (*Curcuma longa*), leaves of "seureuh" (*Piper betle*) and leaves of "jawer kotok" (*Plectranthus scutellarioides*) have more than two categories of use. Among the four postpartum medicinal herbs, jamu godogan used for days 8-15 is made up of the most variety of plants (11 species), followed by "pakinum atah" herb and the jamu godogan for days 16-40 (9 species), and "galogor" herb (8 species). The importance of *C. longa* and *P. betle* in traditional medicine as well as

pharmaceutical industry is widely known (Dyer & Palmer, 2004; Seidemann, 2005; Ramadevi et al., 2007; Skornickova et al., 2007). *P. scutellarioides* was reported to contain mild hallucinogens (Schultes, 1976), but its medicinal potential is not yet known, unlike its more famous relatives *P. Amboinicus* (Seidemann, 2005).

Unlike researches on the benefit of medicinal plants for postpartum care, research on utilization of medicinal plants in newborns is not much known. The data analysis shows two plants species are used as fever-lowering agents and two species are used to cleanse baby's eyes. To reduce fever, leaves of the plant are manually crushed or grinded , mixed with coconut oil and applied on to the infant's fontanelle and applied to the body with a gentle massage.

To cleanse the infant's eyes, flowers of "teleng" (*Clitoria ternatea*) or tree bark of "secang" (*Caesalpinia sappan*) are soaked in water, the bluish water (from teleng) is then dripped into the infant's eyes. This seems to be a typical common traditional practice found only in Indonesia (Sastroamidjojo, 1968; Mardisiswojo & Radjakmangunsudarsom 1968; Heyne, 1987), it is not known in India (Khare, 2007) or even in China. It is suggested that saponin and poliphenol contribute to the cleansing property (Hutapea, 1993).

Figure 4. "Teleng" (*Clitoria ternatea*)

The active compounds that might have medicinal properties in the species of *Hibiscus rosa-sinensis*, *Litsea robusta*, *Rubus rosifolius* and *Vitis* sp. need further studies in order to increase and strengthen their potential value as medicinal plants.

Conclusion

The role of dukun beranak or paraji in some villages in Caringin Subdistrict, Bogor Regency in assisting during childbirth is still indispensable, although these villages have access to health facilities. Local wisdom and knowledge of the Cimande community in postpartum care is demonstrated by the diverse information on the benefits and use of each drug-beneficial species. Fifty plant species were used in postpartum care in Cimande. There are four species that are used for the care of the newborns; two species are commonly used; and seven species have never been previously reported.

The potential of these medicinal plants in postpartum care need further studies to improve/strengthen their benefits. Moreover, full government support is important for the recognition of "Indonesian Traditional/Natural Medicine" that uses herbal ingredients.

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