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Gendered Division of Labor in Medicinal Plant Cultivation and Management in South West Ethiopia: Implication for Conservation

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ABSTRACT

Ethiopia is considered as one of the countries with rich plant biodiversity in the world. However, biodiversity decline through time due to several activities including medicinal plants use role of gender is less investigated. Therefore, this study focused on the role of gender in medicinal plants cultivation and conservation practices in three districts of Jimma Zone, Ethiopia. Multistage sampling technique was used to select study sites and respondents in Mana, Kersa and Seka Chekorsa districts of nine peasant associations. One hundred eighty respondents were interviewed using semi-structured questionnaires. Focus group discussion with key informants at each study areas were made to gather more information. An ethnobotanical data collection method was used for collecting data, both quantitative and qualitative data were collected. Data was analyzed using SPSS software version 16. The result showed that medicinal plants reported from the study area classified in to 25 families and 36 species, with growth forms 11 shrubs, 19 herbs and 1 climber. The result indicated that women are largely involved (37.67%) in cultivation and conservation (41.13%) of medicinal plants in compared to all family members in the study area indicating that mothers are responsible for family health care. The present study has revealed that local people of Jimma zone have rich knowledge of medicinal plant cultivation and management with more responsibility on women. This knowledge has far reaching importance in contributing healthcare system and biodiversity conservation. Therefore, it is essential to promote the local medicinal plants cultivation and management practices to benefit the future generation from both the knowledge and the medicinal plant diversity.

Key words: Gender, biodiversity, medicinal plant cultivation, management, conservation

INTRODUCTION

Ethiopia is one of the countries with a rich plant biodiversity in the world. It is believed to be home for about 6,500 species of higher plants with approximately 12% endemism (UNEP., 1995). The considerable genetic diversity in the various biotic make up makes the country a considerable diversity hot spot for plants.

Travelers, naturalists, pharmacologists and plant collectors who visited Ethiopia between about 1830 and 1930 listed different medicinal plants in use and their conception by the local traditional medicine men. Most Ethiopian traditional medicinal knowledge is kept in strict secrecy, however, it is dynamic in that the practitioners made every effort to widen their scope by reciprocal exchange of limited information with each other or through reading the traditional pharmacopeias.

In Ethiopia the modern medication system is still in developing stage therefore, ethnomedicinal plants are widely used by 80% of the population (Abebe, 2001; Giday, 2001). Not only this, the modern system of medicine is trying to merge traditional system of medicine applying various modern scientific approaches.

Yineger *et al.* (2008) reported 67 ethnomedicinal plants from southwestern zone which are in use by traditional healers to treat 51 different human ailments. Numerous species of ethnomedicinal plants are threatened in most of developing nations mainly due to overexploitation, overgrazing, habitat loss and alteration, destructive harvesting techniques, unsustainable trade and deforestation (Hamilton, 2004). The loss of medicinal plant species has also been aggravated by the erosion of the age old accumulated indigenous knowledge on traditional use and management of these plants (Abebe, 2001; Abebe and Ayehu, 1993; Addis *et al.*, 2001). According to Kelbessa *et al.* (1992) and Edwards (2001), habitat and species are being lost rapidly as a result of the combined effects of environmental degradation, agricultural expansion, deforestation and over harvesting of species. This is also further enhanced by human and livestock population increase thus hastening the overall rural livelihood impoverishment and loss of the biological diversity and indigenous knowledge which is also of global concern since some of this are endemic to Ethiopia. In Ethiopia various preliminary studies has been conducted and country now has realized the potential of medicinal plants. Due to lack of knowledge majority of the farmers are not adequately aware about the profitability of medicinal plants cultivation. But, there are few cultivators who are trying to cultivate medicinal plants by their own initiatives. Probably they could cultivate medicinal plant along with vegetables. Furthermore, the expected increase in the cost of commercial drugs and their occasional impotency also increase demand of medicinal plants. The proportion of consumers who rely on harvesting medicinal plant is the highest in the rural area, since collecting from natural plantation is most accessible and cost affective (Bekele, 2007).

Role of women in harvesting most of the forest produce is of paramount importance especially in the developing countries. This has generated income for them and in turn improved quality of their life. In 1970, feminist economist assesses the role of women in agriculture in Asia, Africa and Latin America. There are few studies which emphasized only on the role of women in medicinal plants collection and trading. A survey conducted in Pakistan has shown that medicinal plants collectors include womenfolk (48.26%), men folk (27.0%) and children (24.74%) (Hamayun *et al.*, 2003). Women also manage the selection of wild genetic resources for home planting, or seeds for conservation in planting season and of plant mixture for intercropping in fields and gardens but it go unrecognized. Within indigenous communities, women often represent the most disadvantaged category due to their lack of or limited access to assets such as land, literacy and credit or participation in decision-making processes. This situation denotes the so-called feminization of have discerned significant divisions between the ethnobotanical knowledge maintained by men and women in rural communities. With few exceptions, research indicates that men tend to be better acquainted with the ethnobotany of old-growth forested habitats and especially arboreal species, whereas women tend to be more informed about disturbance species associated with

homegardens, swiddens and other products of human habitat change (Kainer and Duryea, 1992; Coe and Anderson, 1996; Gollin, 1997; Caniago and Stephen, 1998; Luoga *et al*., 2000; Pfeiffer, 2002).

Research findings indicated that, many medicinal plants species are threatened by habitat modifications, unsustainable use and patterns of harvesting (World Bank, 1992; Sheldon *et al*., 1997; Dhillion and Amundsen, 2000; Tabuti *et al*., 2003). As result there is an urgent need to undertake ethnobotanical studies of medicinal plants (Mahunnah, 1991), particularly in relation to assessment of gender roles in the sustainable use of medicinal plants resources (Pandit and Babu, 1998; Wolf and Konings, 2001).

The experiences and practices of women as gatherers, cultivators, natural resource managers and providers of sustenance and health care for their families constitute a substantial indigenous knowledge system that can contribute to the conservation and sustainable use of medicinal plants and biodiversity as a whole (Schalkwyk and Woroniuk, 1998). Furthermore, women at home could grow them in pots or on small piece of land on contract basis and contribute to family income enhancement have not yet documented for the same goal. As a result, this study came up with information in the medicinal plant cultivation and conservation practices and different roles played by gendered division of labor from cultivation to conservation, which give an opportunity to collaborate with pharmaceutical companies directly on profit sharing basis thereby conserving the medicinal plants. Therefore, the current study was aimed to assess the gendered division of labor in medicinal plants cultivation and conservation in selected districts of Jima zone, southwestern Ethiopia.

MATERIALS AND METHODS

Study site description: The study sites were selected based on multi-stage sampling technique as Oromiya National Reginal State was selected from different regions exist in the country. Again, Jimma zone was selected due to hot humid climatic condition with diversified vegetation types. Of different districts of Jimma zone, three of them namely, Manna, Seqa Chekorsa and Karsa weredas (districts) were selected for the study sites. Based on vegetation types and agro-ecology, those districts can reflect Jimma zone. After discussion with experts and representative body at each district level three Peasant Associations (PAs) were considered for the current study (Table 1).

Respondent selection and data collection: After getting ethical clearance from concerned departments of Jimma University, Ethics and Review Committee and district leaders of study areas, both qualitative and quantitative approaches were used for this study. From each peasant

Table 1: Description of the study sites

Woreda	Peasant associations (PAs)	Aspect with respect to Jimma town
Mana	Gudeta bula	Western
Mana	Haro	Western
Mana	Kitibile	Western
Seka chokorsa	Ankeso	South west
Seka chokorsa	Merewa	South west
Seka chokorsa	Buyo kechema	South west
Kersa	Kella Gudda	North east
Kersa	Gibe Buso	North east
Kersa	Shashamane	North east

association 20 farmers were purposefully selected for data collection considering age that able to generate information from each study area (180 respondents in total), after having discussion with the inhabitants and authorities. Ethnobotanical methods of Martin (1995) and Cotton (1996) was used for collecting data on cultivation and conservation practices using semi structured questionnaire, key informants. Data collection were conducted from December 2012 to April 2014. To gather better information in the field open interviews and discussions were held with farmers, children and women during extended field visits and farm walks that were undertaken for tracking down specific medicinal plants in the study areas. The study team was guided by local elders who able to identified and key informants who also acted as translators. Whenever possible, background information was collected on medicinal plants presented herein, vernacular names of the plants were registered, photographs of the species and on relevant details of the plant were taken and a sample of the plants was taken. Moreover, some informal discussions were held with organizations like offices concerned with Environment and Forest' herbal product producer at district level.

The help of local administrators, local people, translators and field assistants were used to conduct study perfectly. The voucher specimen of medicinal plants was collected and verified from herbarium materials, experts and taxonomic keys in the Flora of Ethiopia and Eritrea (Hedberg and Edwards, 1995) and other Flora books.

Data analyses: Questionnaires were coded, entered into excel sheet and analyzed using SPSS software version 16. Descriptive statistics were used to calculate socio-economic conditions of the respondents, gender division of labor and time spent with all families on medicinal plant cultivation and conservation in the study areas. The qualitative data was narrated and summarized into tables, figures and graphs to explain all parameters to address the objective.

RESULT AND DISCUSSION

Socioeconomic description of the study population: The study populations involved as respondents include 52.22% male and 47.77% female. Age wise 60% are in the range of 40-60 years indicating their maturity in providing information of medicinal plant cultivation and utilization (Table 2). Quiroz (1994) described that, knowledge is a possible reason for elders to domesticate and provide information on medicinal plants, where as young people below 20 years knew nothing about medicinal plants unlike the elders. There is a general consensus that the indigenous knowledge, which was previously handed down through generations by cultural transmission is declining with age (Kideghesho, 2008; Songorwa *et al*., 2000). Similarly, Voeks (2007) found out that linear regression of the ages of participants with knowledge of medicinal plant naming and usage in the study community as knowledge of the medicinal properties of nature steadily increases with increasing age of the participant. Hareya (2005) also, clearly indicated that middle-aged women and men (approximately 40-60 years old) seem to have a greater breadth of knowledge, encompassing plant location (knowledge of primary habitats), identification, collecting, preparation and administration of the treatments.

More than 96.62% of the respondents are married and 88.8% are Oromo people who are indigenous in the study area. These indigenous people have indigenous knowledge on medicinal plant cultivation and conservation practices. With regards to occupation, 96.5% farmers and while educational status result reviled 53.07% them studied primary school and while 44.13% are illiterate (Table 2). In line with, 72.29% of the respondents lived in the study area over 30 years and 20.48% leaved for 20-30 years.

Table 2: Socio-economic characteristics of the respondents

Characteristics	Percentage
Sex	
Male	52.22
Female	47.77
Age	
<25	0.00
25-40	26.11
40-60	60.00
>60	13.89
60.00	
Religion	
Christian	2.23
Muslim	97.77
Wakifeta	0.00
Others	0.00
Marital status	
Single	1.35
Married	96.62
Divorced	2.03
Widowed	0.00
Ethnicity	
Oromo	98.88
Amhara	0.00
Tigre	0.00
Dawro	1.12
Others	0.00
Occupation	
Farmer	96.50
trader	1.68
Others	1.68
Educational level	
Illiterate	44.13
Primary	53.07
High school	2.23
Others	1.12
Duration of respondents residence in the study area (years)	
<10	1.81
10-20	5.42
20-30	20.48
>30	72.29

Major crops growing in the study area: Major food crops grown in the study areas include both cash and food crops. Maize is the most dominate food crops followed by sorghum. About 80.56% of the income covered by cash crops and food crops and medicinal plants accounts less than 2% each as source of income for the society (Table 3).

Medicinal plants cultivation, source and role of gender: Medicinal plants cultivated in the study area of Jimma zone for home consumption as medicine and other uses are indicated. Medicinal plants recorded from study area classified in 25 families and 36 species. Growth forms

of the plants include 6 habits, 11 shrubs, 19 herbs and 1 climber. Twenty nine of them are used for food and medicine (Neutraceutical plants) and eleven of them were reported for medicinal purpose only (Appendix 1). Medicinal plants are cultivated in mixed with other crops (5.76%), Agro-forestry (12.57%), live fences (21.99%) and home gardens (59.69%) in the study area (Table 3). The result of the present study has shown that 48.91, 37.12% are from cultivation in agricultural fields and from the wild, respectively. The result also indicated that 59.69% medicinal plants are cultivated and conserved in home gardens (Table 4).

Table 3: Proportion of major, food crops and source of income in the study area

Crop types	Percentage
Major crops	
Coffee	61.87
Chat	15.95
Avocado	9.73
Mango	7.78
Others	4.67
Major food crops	
Maize	46.61
Sorghum	29.94
Root and tubers	0.28
Teff	21.47
Others	1.69
Major source of income	
Cash crops	80.56
Food crops	16.11
Medicinal plants	1.67
Others	1.67

Table 4: Source of medicinal plant, cultivation place and family responsibility in medicinal plant cultivation and conservation

Status	Frequency	Percentage
Sources of medicinal plants		
Cultivated	112	48.91
Collect from wild	85	37.12
Buy from market	17	7.42
From neighbors	14	6.11
Others	1	0.44
Cultivation area		
Home garden	114	59.69
Mixed with other crops	11	5.76
Life fences	42	21.99
Agro-forestry	24	12.57
Responsibility for cultivation of medicinal plants		
Mother	55	37.67
Father	30	20.55
Children	1	0.68
Responsibility for conservation of medicinal plants		
Any of the family	60	41.10
Mother	58	41.13
Father	42	29.79
Children	0	0.00
All	41	29.08

The focus group discussion has also indicated that mothers are the major actors for cultivation (37.57%) and conservation (41.13%) of medicinal plants at home garden. In this regard the gender division of labor in medicinal plants cultivation and management is remarkable (Table 3). Voeks (2007) described by comparing several variables between men and women and he found out that women knew a greater percentage of medicinal plant vernacular names, cultivation, conservation and also a greater percentage of the medicinal uses of different species. The author concluded that, women in the study area did appear to serve as receptacles of medicinal plant wisdom and women accumulate this knowledge of nature more rapidly throughout their lives than men. Current study also showed, men are the second most responsible while other family members are least responsible in cultivation (20.55%) and conservation (29.79%) of medical plants (Table 4). This is an evidence for women being the most responsible person in family health care. Similarly, Pfeiffer (2002) identifies significant spatial partitioning of ethnobotanical knowledge of native fruit species between women and men.

As shown in Fig. 1, women are the major players in managing medical plants. By equivocal assessment and from group discussion result it becomes clear that women are responsible for family health. The Role of women in planting and weeding, harvesting and processing, selling and managing money from selling medicinal plants account 46.75, 36.09, 43.55 and 38.71% of each activities, respectively comparing with all family members contribution. Momsen (2004) pointed out that in rural regions of the tropics, gendered divisions of labour among subsistence communities is predominate. Men are often engaged in different activities while, women are more likely involved in managing local resources, such as home gardens and other disturbed habitats relatively near the home.

Family time spent in medicinal plant cultivation and conservation: The result of the present study revealed family time spends on cultivation and management of medicinal plant in the study area (Fig. 2). More than 57% of the respondent spends on managing medicinal plant to be up to five days throughout the year.

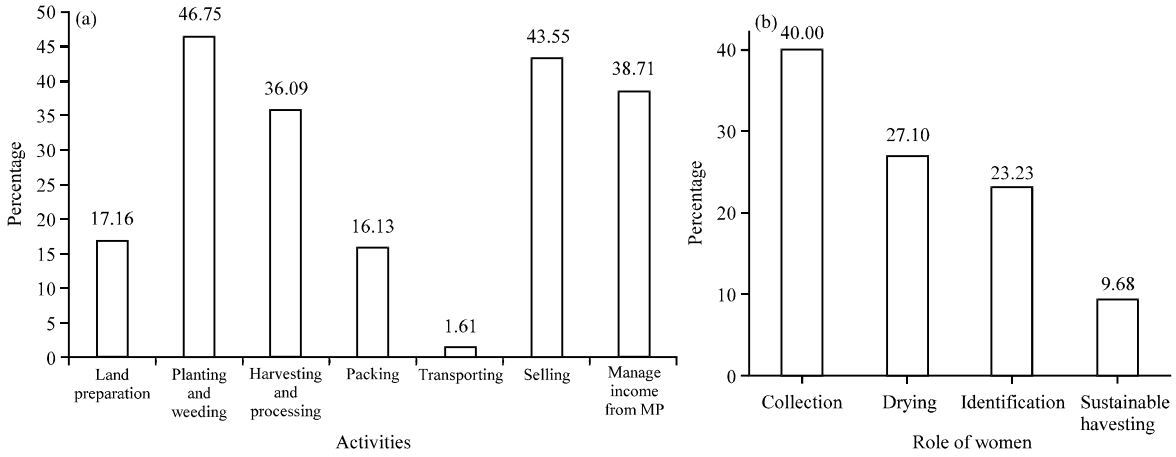

Fig. 1(a-b): Role of women in pre harvest, post harvest and marketing of medicinal plants activities, (a) Both pre-harvest and post harvest and (b) Post-harvest

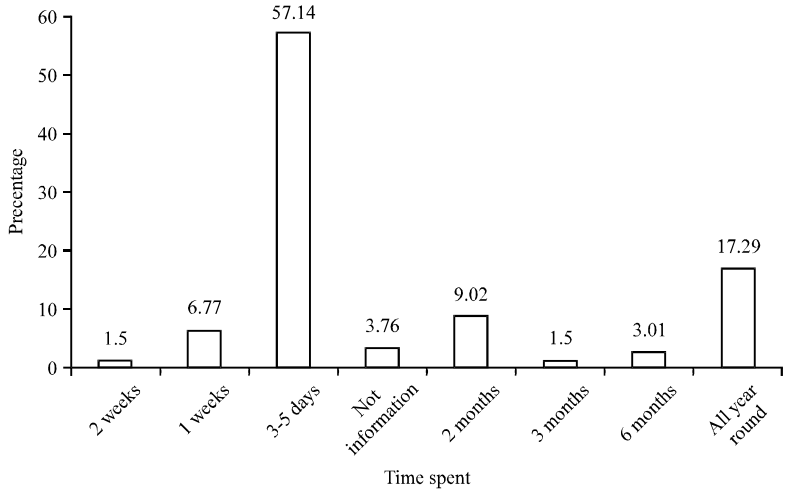

Fig. 2: Duration of time spent on medicinal plant cultivation and conservation by family members

CONCLUSION

The result of the present study has reveled that the Cultivation and conservation of medicinal plants in agricultural fields and home gardens has positive contribution to biodiversity in general and agricultural biodiversity specifically. It also contributes to continuity of the indigenous knowledge evolving with the biodiversity components. It is essential to promote the local medicinal plants cultivation and management practices to benefit the future generation from both the knowledge and the medicinal plant diversity.

Appendix 1: Cultivated medicinal plants reported by respondent from the Study area

Local name	Scientific name	Family	Habit	Use
Dimbilala	*Coriandrum sativum* L.	Umbelliferae	H	Neutraceutical
Shimfi (Fexo)	*Lepdium sativum* L.	Cuicifarae	H	Neutraceutical
Gesho	*Rhamnus prinoides* L.	Rhamnaceae	S	Neutraceutical
Insilal	*Foenicym vulgare* Mill	Umbeliferae	H	Neutraceutical
Kusaye	*Lantana trifolia* L.	Verbenaceae	S	Medicinal
Korarima	*Aframomum korarima* Pereia	Zingiberaceae	H	Neutraceutical
Barzafi adi	*Ecucalyptus gamdulensus* Labill	Myrtaceae	T	Medicinal
Dhumuga	*Justia Schimperi Rangia grandis* T. Andes	Acanthaceae	S	Medicinal
Shumbura	*Cicer arietina* L.	Leguminaceae	H	Neutraceutical
Chilatama (Tenadam)	*Ruta graveolens* L.	Rutaceae	H	Neutraceutical
Abasuda (Tikur azmud)	*Nigella sativa* L.	Ranunculaceae	H	Neutraceutical
Timbo	*Nicotina tobacum* L.	Solanaceae	H	Medicinal
Xosinyi	*Calaminth paradoxa* Labiate	Labiatae	H	Neutraceutical
Zingibil	*Zingiber officinale*	Rosaceae	H	Neutraceutical
Abishi	*Trigonella foenum-graecum* L.	*Fabaceae*	H	Neutraceutical
Qulubi adi	*Allium satimum* L.	Liliaceae	H	Neutraceutical
Miximixa	*Capscum minimum*	Solanaceae	H	Neutraceutical
Irdi	*Curcuma longa* L.	Zingiberaceae	H	Neutraceutical
	Curcuma domestica Valeton			
Karootii	*Daucus carota* subsp. *sativus*	Apiaceae	H	Neutraceutical
	(Hoffm.) Schübl. and G. Martens			

Appendix 1: Continue

Local name	Scientific name	Family	Habit	Use
Azmudi adi	*Carum capticum* L.	Umbelliferae	H	Neutraceutical
Talba	*Linum ustitatissium* L.	Linaceae	H	Neutraceutical
Gatira	*Juniperus procera* Hochst. Ex Endl	Cupressaeae	T	Medicinal
Damakasse	*Ocimum lamifolium* Wild	Labiate	S	Medicinal
Eebicha, dheebicha	*Vernonia amygdalina* Delile	Asteraceae	S	Medicinal
Papaya	*Carica papaya* L.	Caricaceae	T	Neutraceutical
Avocada	*Persea americana* Mill	Lauraceae	T	Neutraceutical
Zayituna	*Psidium guajava* L.	Myrtaceae	S	Neutraceutical
Dadaqula (dubba)	*Cucurbita pepo*	Cucurbitaceae	C	Neutraceutical
Nimii	*Azadirachtaindica* A.Juss	Meliaceae	T	Medicinal
Burtukana	*Citrussinensis* (L.) Osbeck	Rutaceae	S	Neutraceutical
Dinicha	*Solanum tuberosum*	Solanaceae	S	Neutraceutical
Buna	*Coffee arabica* L.	Rubiaceae	S	Neutraceutical
Besobila	*Ocimum santum* L.	Labiate	S	Neutraceutical
Qoba	*Recinus communis* L.	Euphorbiceae	S	Neutraceutical
Qoddo	*Myrtu scommunis* L.	Myrtaceae	T	Neutraceutical
Aritti	*Artemis iaafra* Jacq. ex Willd.	Asteraceae	H	Medicinal

Local names are in oromo language

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