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Gender Roles in Dairy Cattle Production, Processing and Marketing in Two Selected Districts of West Shoa Zone of Oromia Regional State, Ethiopia

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Abstract

The study was undertaken to examine gender roles in dairy cattle production, processing and marketing in two selected districts of west Shoa zone of Oromia regional state. To grasp the variation in gender roles due to socio-cultural differences among various societies, the two districts, Dire Inchini and Dano were purposively selected to represent the highland and lowland areas of the zone respectively. A total of 144 dairy farmers were randomly selected from the districts and semi- structured questionnaire was administered to collect primary data. Results of the study revealed that most of the dairy production activities like milking (86.1%), churning (62,7%), barn cleaning (81,2%), fetching water (51.4%), feed preparation (58%), record keeping (91.6%) and marketing of dairy products (95%) were performed by women. On the other hand, dairy house/barn construction (89.6%) and fodder production (93.2) were reported as the main responsibilities of the men. It was also observed that male children/son involved in herding (81.2%) in both the districts while the female children/daughter were equally involved in fetching water (41.7%) and churning (34.5%) with their mother. Moreover, decisions on selling cattle (85.5%) and labour input (88.1%) were made by men. Even though it seemed that the participation of different gender groups were similar in both districts, feed preparation (77.6%) were reported to be carried out by women in Dano district and only (46.1%) was reported from Dire Inchini. Even if most dairy activities were performed by the women gender group, this study found that the male or husband was the only gender group participate in training or extension activities in the area. Thus for increasing the benefit of dairy sector and improving the livelihood of the dairy farmers, any training endeavor should accommodate the women who practically involved in the management of the dairy cattle.

Keywords: *Gender Roles; Dairy Cattle Production; Processing and Marketing*

Introduction

Worldwide, women produce over 50% of the food and it is more than this in developing countries. Women in Africa play a significant role in agriculture but they are more often considered as family assistances on farmland belonging to their husbands who have a correspondingly enhanced status. They are usually have a sole responsible for food processing and also make a major contribution to food storage, transportation and marketing but they seldom control the revenue generated [1]. Women play an important role in livestock management as well including milk production, processing and marketing although not all women control the sale of milk and its products [2].

Even though two-thirds of the world's poor livestock keepers are rural women, limited research has been conducted in recent years on their roles in livestock keeping and the opportunities livestock-related interventions could offer those [3]. Regardless of their many responsibilities, women have significantly less access to resources and services which impair increased productivity and their income earning potential. They are frequently neglected in economic, trade and development policies and planning because of socio historical patterns in regard to gender-based division of labor. The role of women is generally associated with non-economic and unpaid work, most of which takes place within the so-called reproductive economy. However, it is the reproductive economy that supplies labor to the economy and transmits social and cultural values to communities, even when such a contribution is not registered in systems of national accounts [4].

Despite the important role women play in farm and household production, they have not been given due recognition in agricultural sector. There has been a great disparity between women and men in education, health, employment, income opportunities and control over asset, personal security and participation in political process. As the results their energetic heart to increases their productivities and productions are turned down or disheartened and remains lower as compared to their potentials [5]. This is aggravated by such factors as lack of education, unequal property rights, exclusion in decision making and limited control over resources. In addition, they also play significant role in labour intensive and time-consuming activities.

In most of the developing countries particularly in low income countries such as Ethiopia, there is a general lack of gender specific data related to the agricultural sector. Although women in Dire Inchini and Dano districts and elsewhere play an important role in small holder dairy farming, there is scant information available on gender roles in dairy farming and management, access and control over resources. This sometimes leads to problems in program planning since official data are essential for policy makers. Present study has been carried out to assess the roles of men and women played in dairy cattle production, processing and marketing of dairy products and identifying key technical, institutional and socio-environmental challenges and opportunities in the role of gender in dairy production activities in two selected districts of west Shoa zone of Oromia regional state.

Materials and Methods

Description of Study Area

This study was conducted at Dire Inchini and Dano districts of West Shoa Zone of Oromia regional state, which are located at 162 km and 233 km, respectively to west of Addis Ababa, the capital city of the country. The area lies within altitude ranges of 2800 - 3020 and 1400 - 2500 m.a.s.l., respectively. The annual rainfall of those districts is 18000mm and 1900 - 1400 mm, respectively. In both districts more than 90% of the population depends on agriculture for their livelihood. Agro-ecologically, Dire Inchini has characterized into high lands (95%) and midland (5%), whereas Dano district is characterized into highland (5%), midland (25%) and lowland (70%). Ensent, bareley, wheat and teff are the major food crops in Dire Inchini whereas maize, teff and wheat are the major food crops in Dano district. In both districts, mixed- crop livestock production system is the main agricultural practice performed by majority of the farmers.

Sampling techniques and household selection

Two districts (Dire Inchini and Dano) were purposively selected based on their livestock resources, accessibility and to represent the highland and lowland agro-ecologies, respectively. Three kebeles were selected from each district and the sample size was determined using [6] formula for homogenous target group. Accordingly, a total of 144 households; 76 from Dire Inchini and 68 household from Dano district were selected. Both female headed and male headed households were targeted to correctly address the differences in the gender roles in dairy production, processing and marketing and in decision making activities in the area. Thus, the sample size was calculated as follows:

$n = N/ (1+N (e)^2)$

Where,

n = The sample size

N = Total number of household

e = Maximum variability or margin of error 8% (0.08)

1 = The probability of the event occurring.

Sources and methods of data collection

Both quantitative and qualitative data were collected from primary and secondary from the selected districts and communities to generate reliable information on the intended topic. Secondary data were collected from zonal and districts agricultural offices, published journal articles, reports and other relevant documents. However, primary data were collected from selected households using semi-structured questionnaires using house-to house survey. In order to collect reliable information for the role of gender role in dairy farming, pre-test of questionnaires were conducted at aforementioned districts and amendment made for final interview. Each questionnaire filled with selected participants across study area. Data collection held with different individual's diverse age group and social categories from the elder group of the community to the officials. During interview, information regarding gender role on dairy production, breed improvement practices, health management, feeding management, watering, milking practices, processing (churning) and marketing and other related information was recorded.

Statistical analysis

Both quantitative and qualitative data generated from house hold survey, FGD and KII were analyzed using statistical package for social science (SPSS) software version 20.0 and summarized by descriptive statistics like means, SE, percentages. Non parametric test (chi-square test) was also employed for dichotomous data. An index was calculated to provide overall ranking of intensity of the constraints mentioned according to the formula: an Index = sum of (n X percent of household ranked first+ n-1 X percent of household ranked second + n-2 X percent of household ranked third+ n-3 X percent of household ranked fourth+ n-4 X percent of household ranked fifth …etc.) given for each purpose divided by the total sum of (n X percent of household ranked first+ n-1 X percent of household ranked second + n-2 X percent of household ranked third+ n-3 X percent of household ranked fourth+ n-4 X percent of household ranked fifth and etc.) for all selection criteria as all as for all constraints mentioned.

Results and Discussion

Socio-demographic characteristics of respondents

Of the total respondents (N = 144), 66% were male headed and the rest 34% were female headed households. The proportion of female households was higher in Dire Inchini (n = 76), 18% than in Dano district (n = 68), 16% (Table 1). Similar studies under taken in Addis Ababa indicated that female households constitute about 33% of dairy farmers [7]. In contrary [8] and [9] reported a well organized (100%) female headed dairy producers around Ambo town. This might be indicated the importance of dairy in supporting livelihoods of female headed households in the urban areas than the rural settings.

The overall mean family size as well as average ages of the respondents in the studied households were 5.4 persons and 43 years, respectively. The highest mean family size (6.2) was found in Dano district as compared to that of Dire Inchini (5.1) district. Neither the differences in family size nor in age of the respondents were significant in both the districts. Due to the fact that agricultural and other activities in the study area are labor demanding, the average family size of both districts were high.

Educational status

Education level is expected to have a positive influence on adoption of dairy technologies because of there is a strong link between education and knowledge and the ability to read technical materials [10] With respect to education status, majority of the respondents (29.2%) at least attended primary education and significant number (5.6%) also attended secondary education (Table 1). This indicated that there were considerable differences in the levels of formal education attended by the respondents in the two districts. The overall

Variables	Study area		
	Dire Inchini	Dano	Over all mean
Age of the respondents (Mean ±SE)	44.61 ± 1.23 [a]	41.12 ± 2.45 [a]	43.00 ± 1.22
Family size (Mean ±SE)	5.1 ± 0.77[a]	6.2 ± 0.65[a]	5.4 ± 0.72
18 - 30 years (%)	13.20	24.3	18.75
31 - 45 years (%)	39.80	37.2	38.5
46 - 60 years (%)	41.20	29.1	35.15
Above 60 years (%)	5.80	7.50	6.65
Sex of the respondents (%)			
Male	67.4	64.85	66.1
Female	37.9	30.2	34.05
Education of the respondents (%)			
Illiterate	26.3	30.9	23.5
Read and write	35.5	38.2	41.0
Elementary school	28.9	20.6	29.2
High school	3.9	10.3	5.6
Diploma and above	2.6	-	0.7

Table 1: *Gender, age and educational status of the respondents.*

literacy rate (76.7%) in the study areas was higher than that of [10] and [11] who reported 60% and 70% in West Wollega zone, Gimbi districtand Jimma zone, Goma distinct of Oromia regional state, respectively. In general, the level of the dairy producer is a pivotal factor in determining household income, adoption of new technologies, demography, health and overall intensification of smallholder dairy production and hence improvement of the livelihood.

Land holding pattern of the household

The average land size for crop production per household (mean± SE) was higher in Dano district (3.0 ± 1.56) than in Dire Inchini (2.09 ± 0.79) ha. Similarly, the average grazing land per household was higher in Dano (1.1 ± 0.56) than in Dire Inchini (0.62 ± 0.51ha). However, the average communal land was higher in Dire Inchini (9.34 ± 5.56) than in Dano district (5.07 ± 2.739) (Table 2). The average land holding of the respondents in the study area were higher than the average national land holding size of 1.77 ha/hh [12]. It was evidenced from FGD and KII discussion that 82.6% of the land was owned by the male and only 11.8% the women owned the land which gave strong ability for men to make decisions.

Parameters	Dire Inchini district	Dano district	Overall mean
Grazing land	0.62 ± 0.506	1.11 ± 0.563	0.85 ± 0.585
Crop land	2.09 ± 0.789	3 ± 1.556	2.86 ± 1.495
Home stead land	0.55 ± 0.594	0.48 ± 0.260	0.52 ± 0.497
Communal land	9.34 ± 5.516	5.07 ± 2.739	7.98 ± 5.196
Other	1.38 ± 1.023	0.77 ± 0.864	1.02 ± 0.965
Total land holding	13.98 ± 7.428	10.43 ± 5.982	13.23 ± 8738

Table 2: *Mean ± SE of total land holding and land use pattern per sampled households.*

Livestock holding per households

Even though cattle, sheep, goats, poultry and equines were the livestock species kept in the study area, cattle were the dominant livestock species kept in the study area. The overall mean numbers of local and crossbred cows per household along with other livestock species in the districts were depicted in table 3.

Livestock Species	Dire Inchini	Dano	P-Value
Cattle breeds			
Local cattle	14.41 ± 5.827	14.39 ± 5.318	ns
Exotic Cattle	6.91 ±.2.23[b]	14.61 ± 5.281[a]	0.0021
Sheep	5.50 ± 1.05	4.68 ± 1.13	0.6200
Goats	1.86 ± 0.063	2.16 ± 0.98	0.0700
Equines	1.76 ± 0.92	1.98 ± 0.84	0.8130

Table 3: *Mean ± SE of Livestock holding per sampled household.*

**ns: Not Significant.*

Experiences in dairy farming of the respondents

Experience in dairying is an important factor as it exposes the farmer to various dairy production techniques. Results of the present study clearly showed that the majorities of the respondents had substantial experiences in dairy farming. Perusal of table 4 revealed that about 90% of the respondents had more than or equal to ten years of experience in dairy production. This has a profound effect in gaining different dairy production techniques which significantly contribute to efficient production and profitability. AN Nwachukwu., *et al*. [13] showed that smallholder farmers with more years of experience achieved higher levels of economic efficiency than less experienced farmers.

Parameter	Dire Inchini		Dano		Overall	
	Frequency	%	Frequency	%	Frequency	%
Experiences in dairy farming						
1 - 5 years	10	13.2	4	5.9	14	9.7
10 years	9	11.8	12	17.6	21	14.6
11 - 15 years	18	23.7	26	38.2	44	30.6
16 years and above	39	51.3	26	38.2	65	45.1

Table 4: *Experiences in dairy farming of the respondents.*

Gender role in dairy management systems

Feed types and involvement of different households in feeding management

As indicated in table 5, grazing natural pasture was reported by 100% of the respondents as the major dairy cattle feed sources in both districts. Crop residues (87.8%) and crop aftermath (67.7%) were also reported as the second and third important feed sources. Only about 30.3% of all the sample households reported to use different agro-industrial by-products as supplementary feeds to dairy cattle. In contrary considerable proportion of the sample respondents (68.9%) reported to use local alcoholic residues (atela). Hay preparation from natural grass (35.8%) and the production and use of improved fodder crops for feeding dairy cattle were also reported by the household respondents as emerging feed resources for dairy cattle. Non-conventional feeds like atela (brewery by-product from locally produced beer and other alcoholic drinks), kitchen and fruit wastes, enset pseudo stem and leaves of other palatable agro-forest plants were also reported as feed resources especially in Dire Inchini district.

Feed preparation and feeding of dairy cattle mostly accomplished by women (58%) than male (29.4%) counterpart. As it was pointed out in Table 5, there was significant variation in the involvement of different gender groups in feeding management in both districts. Majority of the respondents (77.6%) from Dano district reported that women are responsible for feed preparation and feeding as opposed to only 40% in Dire Inchini district. Feed resources identified in the present study are similar to the commonly used feeds in other rural dairy farming systems in the country [10]. It was also observed that 58% of the respondents give priority of supplementation and feeding of milking cows.

Activities	Dire Inchini				Dano				Over all			
	Men	Women	Son	Daughter	Men	Women	Son	Daughter	Men	Women	Son	Daughter
	%	%	%	%	%	%	%	%	%	%	%	%
House construction	90.8	2.6	5.3	1.3	88.2	-	11.8	-	89.6	1.4	8.3	0.7
Milking		76.3	1.3	22.4	-	79.1		2.9	-	86.1		13.9
Fetching water		46.1	3.9	50	-	57.4	10.3	32.4	-	51.4	6.9	41.7
Watering at field	7.9	1.3	81.6	9.2	16.2	2.9	80.9	-	11.8	2.1	81.2	4.9
Barn cleaning	1.3	67.1		31.6	-	50	-	50	11.8	81.2		2.3
Cultivate fodder	89.5	3.9	5.3		96.5	-	3.5	-	93.2	2.3	4.5	-
Feed preparation and feeding	40.8	46.1	13.2		10.4	77.6	11.9	10.4	29.4	*58*	11.9	.7
Herding	7.9	1.3	81.6	9.2	16.2	2.9	80.9	-	11.8	2.1	81.2	4.9
Record keeping	10.5	84.2	1.3	3.9	1.5	98.5	-	-	6.2	91.6	-	2.8
Isolating sick cattle	32.9	55.3	10.5	1.3	33.8	39.7	26.5	-	32.9	48.3	18.9	-
Manage the calve	5.3	32.9	61.8	-	11.8	27.9	23.5	36.8	14.6	41.8	43.8	-
Churning the milk	-	73.7		26.3	-	51.5	5.9	42.6	-	62.7	2.8	34.5
Selling dairy products		51.4				6.9				41.7		

Table 5: *Gender participation in different dairy production activities at house hold level.*

Water resources

Rivers, dams and wells, spring water and bore holes were the main water sources identified in the study areas. The majority (84.8%) of the households obtained water from rivers, while 10.2% from lake and the rest from other sources. However, the availability of water resources depends on the season and distance from respondents' residential area especially in lowland kebeles. During the dry season, the majority of the households provide water once a day. The current result showed that there is significant difference in the involvement of different household members in providing water for their dairy cattle in particular and for their livestock in general. Accordingly, fetching of water and providing at home seemed a main responsibility of female members (mother- 51% and daughter- 41.7%) whereas, providing water at field condition was reported to be the major responsibility of the son or herder (81.2%) as the male children were responsible for herding cattle and other livestock in the area.Dairy house construction and cleaning.

Dairy house construction and Cleaning

It was observed that most of the dairy cattle in the study areas were not housed separately. The cattle were kept in an open barn called Dallaa in back yard for only nighttime. The purposes of housing in the study districts were to protect/control cattle movement from place-to-place and from the attack of wild beast. Similarly, in Gimbi district of west Wollega zone [10] reported that mature cattle are kept in open enclosures locally known as "Dallaa" during the night to prevent them from wandering around and damaging crops or other

properties and to protect them from predators. About 87.9% of the respondents reported to construct this shelter (Dalla) at homestead and 5.85% at open paddock of their field. Only 6.25% of the respondents reported to share the same house together with family. It has been noted also the size of herd determine where to construct the barn (Dallaa) where farmers with less than two cattle used to house together with family. Some farmers also use open paddock housing and housing with family for crossbred cows and their oxen at summer (wet seasons).

Majority of the respondents (89.6%) reported that construction of livestock house in the areas was carried out by men family member.

Accordingly, 90.8% of the sample households from Dire Inchini and 88.2% sample households from Dano reported that construction of dairy cattle house was the mere responsibility of husband/men). Similarly [8] reported that 85% of respondents from Ambo keep their animals in the barn constructed by men/husband.

Barn/dairy house cleaning was mainly accomplished by the female members of the household. It was noted that 100% of barn cleaning in Dano district was a shared responsibility of women/mother (50% and daughter (50%). In Dire Inchini district, 67.1% of the respondents reported that barn cleaning as the mere responsibility of a women/mother and the involvement of daughter was also reported by 31.6% of the sample household. Only 1.3% from Dire Inchini district reported that the involvement of husband/men were barn/dairy house cleaning.

Milking practices

Of the interviewed dairy cattle producers, 96.3% of households milked their cows twice a day. Very few farmers (3.7%) milk their cows once a day. The high percentage of milking twice per a day is similar to the milking frequency practiced in many parts of the country. B Amanuel., *et al*. [14] also reported that 96.2% of dairy producers practiced twice milking frequency in Gimbi district of west Wollega zone. Time of milking is normally in the early morning and late evening for twice/day milking. Rural farmers did not bother about the regularity of milking time.

Women in over all of the respondents in the study area contribute more proportion of labor and time than other household members. The reason for over all findings could explain the fact that 81.2% barn cleaning, 51.4% fetching water and the most dairy management roles are traditionally carried out by women. Men's main responsibilities were feeding (29. 4%), cultivating fodder (93.2%), record keeping about breeding (10%), and health management (32.9%. House construction is mainly done by men (89.6%) and only (1.4%) of women does so. This finding is supported by other study [20] identified the same result.

Figure 1: *Milk churning from Dire Inchini district.*

Gender ownership to land and livestock

In Ethiopia, there are different kinds of land-use rights and forms of land ownership exist. It is of vital importance that a certain degree of security of land tenure and/or grazing rights exists on communal or public land, to ensure that farmers will be willing to invest in dairy development.

In study area, the large proportion of land and large animals are owned by men (82.6%) while only (17.4%) owned by women. Respondents argued that women were considered capable of fully owning poultry and making independent decisions about milk, butter, chickens and eggs because these were resources that could be managed within the household compound. Women, however, thought they were more knowledgeable about issues related to food. Dairy ownership was associated with the division of labor. Women produce 80% of basic food staff but receive less than 10% of the credit given to men. Agricultural productivity would have been increased by 20% if women have got access to credit [21,22].

Male and female household members reported joint ownership of dairy when carrying out complementary roles in raising the livestock. Respondent women in Dire Inchini and Dano cited examples such as husbands being responsible for selling and buying livestock while the children herded and watered the animals and the women gathered grasses and residues to feed the calves kept around the homestead. Both male and female respondents also highlighted that women and children owned small ruminant and poultry.

Parameter	Study district				Overall	
	Dire Inchini		Dano			
	Frequency	%	Frequency	%	Frequency	%
Men	57	75.0	56	82.4	119	82.6
Women	8	10.5	4	5.9	17	11.8
both men and women	11	14.5	8	11.8	8	5.6
Total	76	100.0	68	100.0	144	100.0

Table 6: *Land owner ship the respondent.*

Dairy products utilization and consumption

In the study area from overall mean about 620.10 ± 733.288 liters of milk was used for home consumption, 802.86 ± 430.468 liters for processing and 940.22 ± 676.234 liters for marketing; the marketable amount was the smallest portion of the daily production. The milk suckled by the calf was not recorded during the study; the milk produced in a household did not include the suckled amount. Similar studies conducted in different parts of the country showed differences in the utilization pattern of milk in different production systems. A study conducted in Gimbi district, West Wollega Zone showed out of the total daily milk produced, most of it (70.5%) was processed, 8% was sold while the left (21.5%) was consumed within the household [14].

Parameter	Study area		Overall
	Dire Inchini	Dano	
	Mean ± SD	Mean ± SD	Mean ± SD
Amount of milk produced for selling per year in litter	472.59 ± 376.161	11.59 ± 401.130	620.10 ± 733.288
Amount of milk produced for processing per year in litter	1105.53 ± 626.722	155.00 ± 40.415	940.22 ± 676.234
Amount of milk produced for home consumption per year in litter	876.25 ± 445.438	782.79 ± 965.465	802.86 ± 430.468

Table 7: *Dairy products utilization.*

The priority of milk consumption in the study areas were presented in figure 2 below. About 61.8% and 53.4% of dairy farmers in Dire Inchini and Dano district give first priority in milk consumption to children while about 19.2% and 22% dairy farmers in Dire Inchini and Dano gives second priority in milk consumption to husbands, respectively and also wife and guests used in small amounts. The finding is similar to [23] finding that consumption of milk and milk products varied geographically among the highlands and the lowlands and the level of urbanization. However, in the highlands the priority of milk and milk products consumption primarily include children and some vulnerable groups of women [24].

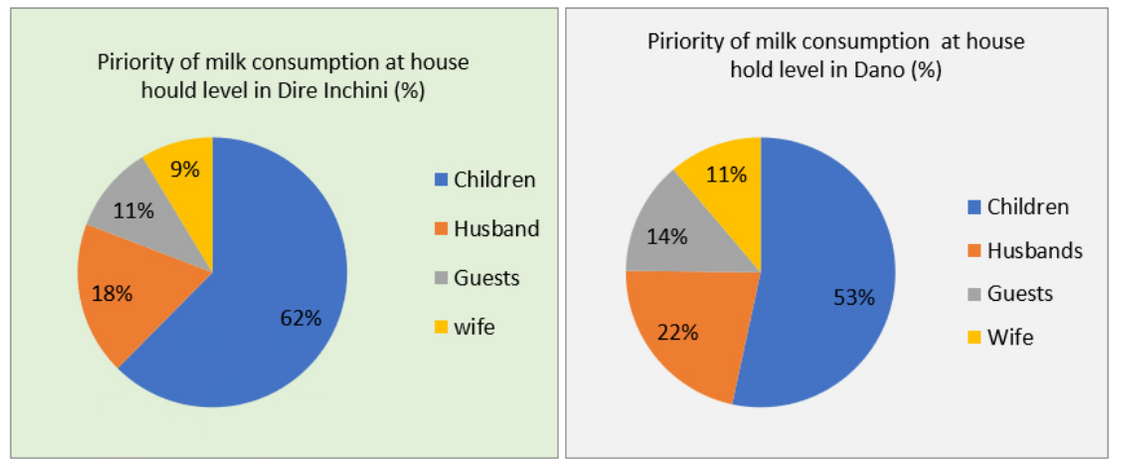

Figure 2: *Priority of milk consumption at household level in Dire Inchini and Dano districts, respectively.*

Market accessible in the study area

Linking smallholder farmers to markets and increasing their level of commercialization in order to increase household incomes and their access to higher value markets is imperative tools in any agricultural program. However, smallholder commercialization and many other development programs in the study area pay no or very little attention to the gender dynamics and ends up in deteriorating the situation of women and worsening the gender gaps. Of the total respondents, 92.5% (Figure 3) reported that women are mainly responsible for dairy marketing. Among dairy products produced in the study area, fresh milk and butter are commonly and cottage cheese was selling during holyday to traders and consumers formally and informally.

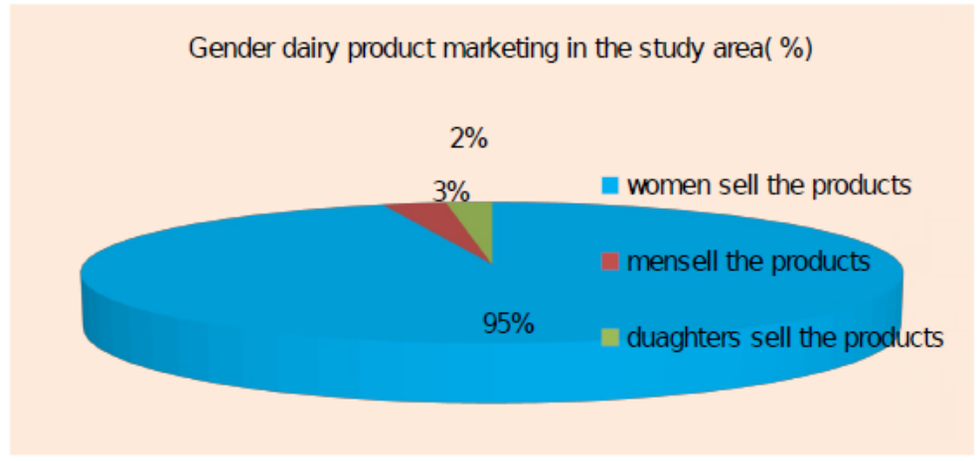

Figure 3: *Gender contribution of dairy product selling.*

All respondents (100%) indicated that prices of milk, butter and cottage cheese are varies from wet and dry season as well as when there are national festivities or holydays. About 79% of the respondents stated that price fluctuates because of seasonal changes and fasting days (Figure 4). The current finding was agreed with [25], who report the price of butter was higher during dry season and national festivities and decrease during the fasting months practiced by the followers of the Ethiopian Orthodox church in which these restricted from eating food of animal source. In addition, [14] also reported from Gimbi District, West Wollega Zone as butter price was fluctuating in the dry and wet seasons, in holydays and festivals period and non-fasting condition.

In the process of smallholder market integration, butter turns to be cash crop which is produced for sale. As many evidences from other countries indicate there is a tendency for a commodity to be taken over by men when it enters the market arena and becomes profitable. Taking the nature of the commodity into account in Ethiopian context, it seems very critical to study the gender dynamics in dairy products marketing. Price fluctuation was identified as one of the major problems in overall the two districts of the study area 79.2% price fluctuate because of seasonal changes and fasting days. Milk market related problems were also reported [26] as one of the constraints in Ethiopian dairy sector. For the seasonality in demand for milk and milk products, processing technologies which could extend the shelf-life of dairy products may remedy the problem.

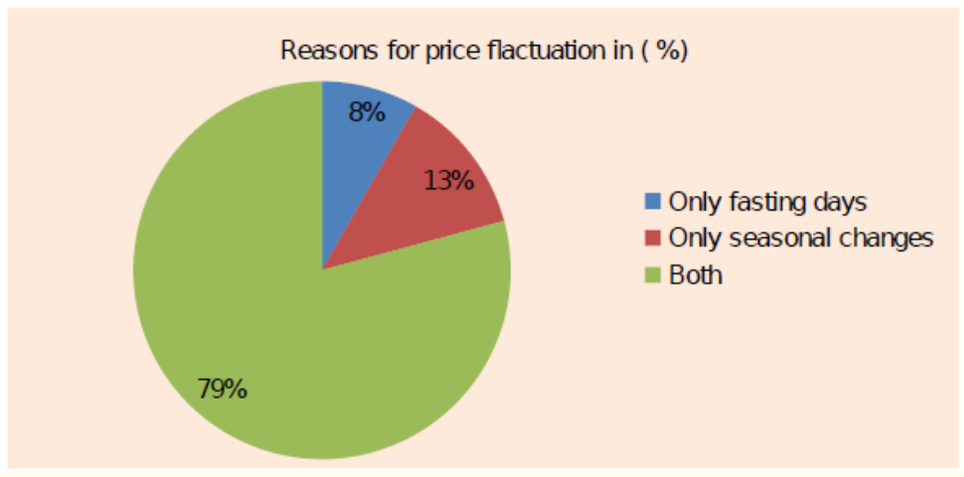

Figure 4: *Reasons of price fluctuation in the study districts*

Gender in training and extension

Of the total respondents,89.9% of respondents indicated that women have no training and information about dairy production, processing and marketing. But, 63.2% of men have training and extension service and 36.8% have no training and extension service (Figure 5). Training and extension in dairy development should be based on the knowledge and skills of the different categories of the target group. Indigenous technical knowledge of farmers, both male and female, especially of technologies and practices requiring little external input, is often not sufficiently recognized or appreciated. In the study area most respondents said that training and extension should also not based on the problems and the interest of target groups. Training and extension should be directed towards those people who do the actual work. Also, women farmers have concerns on income generating activities. They are interested household business rather than farming itself even though they are farmers.

If they are producing they want to know what to do with it after harvest instead of just selling it as raw milk. They need value addition and are interested in learning how to change to other milk products. Hence, our extension service courses are not solely about production but about processing and marketing of products which is an important task of women farmers in contributing to food security.

While the bulk of the work related to dairy production is done by women, the majority of participants in dairy training centers are often men, since extension workers tend to contact men. Since income from milk is frequently the major source of revenue for women, they may be more motivated than men to adopt technical innovations. In many cases extension workers have been able to pay attention

to the specific role of women and to insist that women receive training if their regular activities so demand. In areas where it is cultural and socially difficult for men to contact female farmers, special efforts should be made to train and employ female extension workers and trainers.

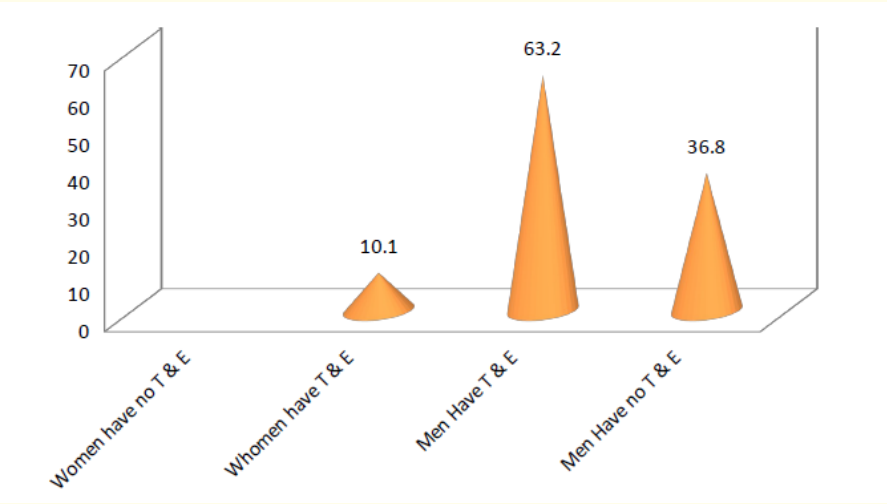

Figure 5: *Training (T) and extension (E) service need of gender in different dairying activities in the study areas.*

Decision making power

Similar to most of the developing country, in the study area the husband control and decide agricultural resources without the participation of wives. Even though women did not have a right to make a decision, what is surprising from this study is that women are doing a great job which often called triple role (production, reproduction and community management). It is also learnt that most of the husbands from the study area husbands do not consult their wife on the allocation of the produce. Study from the United Nation statistically shows that women do 2/3rd of the available job in the world and earn 1/10th of the income.

Most of the African women have not benefited from investment and trade of Agricultural products because they have limited access to land, credit, transport, etc. In the study area from over all respondents 85.5% of male are decides about selling of cattle and 15.5% of women decides about selling of cattle and 88.1% men decides about labor in put while women decides 11.9% about labor input and 35.1% of husband sell any animals without consulting his wife but he told her. This is because while women's decision making power within households, where most of the decisions about care for household members take place, is known to be lower than that of men, women are the main caretakers of household members (especially children and the aged) in most of the developing countries of the world. Past studies have demonstrated that when women's power is increased, they use it to direct household resources toward improving their caring practices and therefore the health and nutritional status of household members [27].

Constraints and opportunities

Availability of feed in quantity and quality was prioritized as number one impediments to dairy production in the area. Other constraints were shortage of supply of genetically superior dairy animals, poor animal health services, poor extension services, limitations of land for sustainable dairy development, marketing, knowledge gap regarding feed conservation techniques could be mentioned worth.

Constraints to women's participation due to time and social restrictions, as well as content of training and also training and extension should not direct towards those people who do the actual work. In both districts of the study area women had little involvement in any training or extension services and men are also did not get enough training on the major areas of interest. Although many constraints are prevailing to hinder the development of dairy sector in the area, the majority of men and women dairy producers have reported willing to continue and expand dairying due to market opportunities in the areas. Urbanization, substantial population growth, change in the living standard of societies in the area, the demand for milk and milk products are among some of the opportunities for dairy development in the area.

Dairying provides the opportunity for smallholder farmers to use land, labour and feed resources and generate regular income. It is also one of the agricultural sectors where marginalized group of the family member, the women and poor who has no access to land can do dairying.

Conclusion and Recommendations

- The result of the study shows that dairy cattle production has paramount importance in supporting the socioeconomic status of people in both districts of the study area. Family labour was the major source of dairy activities where it seems clear gender specific activities. Milking, churning and related activities were found to be a sole responsibility of women. But other activities like house construction and treatment were mostly conducted by men. The sale of live animals usually decided by male and women also decide on milk and milk products selling even if they do have low power to control-over the income obtained from dairy products. Hence, the following recommendations are made based on the present data.

- Although market opportunity and linkage are key for smallholder dairy development, support services in terms of accessing adequate land, organizing input supplies (improved genetic material, feeds, AI, drugs), provision of credit, extension and training services, production and entrepreneurial skills development for gender are key elements for success.

- Training and extension services should balance between the development of technical and methodological skills, and creating a social awareness for putting gender strategies into action.

- There has to be improvement in the participation and decision making of women in dairy cattle production, processing and marketing.

- There has to be policy and regulation that ensures gender-sensitive participation becomes integral part of any dairy cattle development projects.

- Considering the gender issues can alter traditional patterns of access to resources taking the issue as critical to inform programs and policies for effective design and delivery of interventions and ensure the benefit of women and men fairly and ultimately contribute to food self-sufficiency, poverty reduction and sustainability.

Competing Interests

The authors declare that they have no competing interests.

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Volume 5 Issue 12 December 2019