

Research Article



Factors Affecting Women Participation in Livestock Farming in District Mardan, Khyber Pakhtunkhwa, Pakistan

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Abstract | Women play important role in livestock farming in Khyber Pakhtunkhwa. A survey was conducted in district Mardan to determine women's participation in livestock farming and to investigate factors affecting their participation. A multistage sampling method was used to select a sample of 274 livestock farm households from 6 rural Union Councils, and a well-structured questionnaire was used to collect data from female respondents through face to face interviews. A composite index was constructed to measure the extent of women's participation, and a linear regression model was used to determine factors affecting women's involvement in livestock farming. Results reveal that women were mostly involved in almost all farming activities. The average composite index value is 4.81 which indicate that women were on average involved for 4.81 hours per day in livestock farming activities. Regression results show that respondent's age, experience in livestock farming and education, education of the household head, access to credit, livestock income, tenural status and distance to city significantly affect women's involvement in livestock farming. Based on these findings the study recommends that significance of women participation to livestock sector must be recognized in government planes and policies. The provision of credit and livestock training facilities to rural women could encourage their participation in livestock farming and provides them decision power in livestock management.

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Introduction

Women in Pakistan's rural areas are actively engaged in agriculture and livestock production. Their role is more important in small production system for enhancing their family's income and meeting their food needs (Younas et al., 2007). Half of the population of rural areas consists of women who carry out both domestic and livestock related activities. They perform not only their routine household activities like cleaning of the home, stitching, cooking, raising their children, but also contribute a lot in livestock farming practices, such as animal shed clean-

ing, taking care of sick animals, feeding, calf rearing, watering to animals, milking and making dairy products, such as ghee, yogurt and butter and marketing of milk and milk products. According to Zubair et al. (1999), in the rural areas of Pakistan male members are mainly involved in agricultural practices, while female in addition to their house responsibilities actively participate in livestock activities.

Existing information on the participation of women in various livestock farming activities is very limited. In Punjab rural women participate in all most all activities of livestock management and contribute

in their families' welfare by providing them income, food, and fuel from animal sources (Ahmad, 2014). Similarly women in Khyber Pakhtunkhwa are also actively involved in all livestock activities. However, very few researches have investigated the level of women participation in livestock activities in Khyber Pakhtunkhwa. Activities performed by men are visible whereas those by women are invisible. Women face constraints while performing livestock activities (Khan et al., 2012).

Present study was therefore designed to find out women participation in livestock and also investigate factors affecting their participation.

Materials and Methods

Study area and sampling technique

A multistage sampling technique was used for selecting the sample. In the first stage, out of three tehsils (Mardan, Katlang and TakhtBhi) of district Mardan two tehsils namely Mardan and Katlang were selected purposively for having maximum number of livestock farms. Each tehsil was further divided into urban and rural union councils (UCs) and three rural UCs were randomly selected from each. In the final stage, households in each selected union council were divided into livestock farmers and others. Households from livestock farming were selected randomly. In total 274 households were selected and number of households from each union council was selected based on Yamane's formula (Yamane, 1967).

$$S = \frac{N}{1+N(e^2)} \dots \dots \dots (1)$$

Where:

S: Sample size; N: Total number of livestock farm households in selected UCs; e: Precision which is set at 6% (0.06).

Data collection

A well-designed questionnaire was used to collect data from the selected farmers using face to face interviews. Efforts were made to keep it simple and explicable so as to capture all the essential information.

Data Analysis

Women participation in livestock activities

Quantification of women's participation in livestock production: A composite index was used as used by Ullah et al. (2015) to measure the extent of or

quantify women's participation in livestock farming. The female respondents were asked to report the time they gave to each livestock activity in a single day. The time for each activity was first transformed using the following equation.

$$TV_i = \frac{X_i - \text{Min}}{\text{Max} - \text{Min}} \dots \dots \dots (2)$$

Where:

TV_i: Transformed value for ith activity; X_i: Time given to ith activity; Max: Maximum time given to ith activity in the total sample space; Min: Minimum time given to ith activity in the total sample space.

This TV was calculated for each activity and for each household. Then the mean TV for each activity was derived and summed to get composite index for women participation in livestock farming.

Factors affecting women's participation in livestock production: In order to find out the determinants of female involvement in livestock management activities simple linear regression model was used. Following Zahoor et al. (2013), the linear regression model for women participation in livestock production is constructed as:

$$LPI = \beta_0 + \beta_1 AGER + \beta_2 AGEH + \beta_3 EDUR + \beta_4 EDUH + \beta_5 EXP + \beta_6 FS + \beta_7 FT + \beta_8 AC + \beta_9 HS + u_i \dots \dots (3)$$

Where:

LPI: livestock participation index; AGER: Respondent age (years); AGEH: Head age in years; EDUH: Head education in years; EXP: Experience in livestock farming (years); FS: Size of family (total number of family members); FT: Type of family (dummy 0 = nuclear, 1 = joint); AC: Credit access (dummy 1 = Yes, 0 = No); HS: Herd size; Bs: Coefficients; U: Error term.

The model was estimated using Ordinary Least Square (OLS) estimation method. Before finalizing the estimated model, the following post estimation diagnostic tests were conducted for multicollinearity, heteroscedasticity and normality.

Results And Discussion

Table 1 shows that women were mostly involved in indoor activities such as shed cleaning, dung collec-

tion and dung cakes making, milking and milk processing. Transformed value for each activity was calculated and mean value of all transformed values was also calculated and then the grand mean of all mean transformed values was calculated which was 4.81. it indicates that women's daily involvement in livestock farming activities was around 5 hours. These results are consistent with findings of Arshed et al. (2013); Amin et al. (2010); Hashmi (2009); Chaudhry et al. (2008); Ali et al. (2007). They reported that women play main role in livestock farming in Pakistan and that livestock management practices like animal shed cleaning, taking care of sick animals, feeding, calf rearing, watering to animals, milking and making dairy products like ghee, yogurt and butter and marketing of milk and milk products are performed by rural women.

Table 1: Women participation index in livestock production activities.

Activities	Max time	Min time	Mean TV
Fodder carrying	3.00	0.00	0.057
Fodder cutting	3.00	0.00	0.297
Feeding	1.00	0.00	0.216
Watering	1.00	0.00	0.338
Cleaning shed	2.00	0.00	0.753
Dung collection	1.00	0.00	0.566
Dung cakes	2.00	0.00	0.566
Milking	3.33	0.00	0.378
Milk processing	1.50	0.00	0.429
Marketing of animal produce	1.00	0.00	0.358
Marketing of animal	3.00	0.00	0.144
Bringing dry fodder	2.00	0.00	0.358
Bathing	1.00	0.00	0.351
Grand mean	24 hours	0 hours	4.812

Source: Survey data (2015-2016)

Estimated model results

The women participation model was estimated using ordinary least square (OLS) estimation and post estimation diagnostic tests were conducted to check for any violation of the classical linear regression model assumptions. No violation was detected. The estimated results are given in Table 2. The R square value is 0.35 which indicates that 35% variation in dependent variable is explained by the model.

Age: Results reveals that age of the respondent has positive and significant coefficient with a p value of

less than 0.05. Mostly women above 40 years of age were involved in livestock farming activities and thus the age coefficient is consistent with prior expectations. Head age has a positive but insignificant coefficient.

Table 2: Results of multiple regression analysis

Variable	Coefficients	Std. Error	t ratio	P- value.
(Constant)	1.70	0.67	2.55	0.011**
Age of the respondent	0.02	0.01	2.11	0.035**
Access to credit	0.91	0.28	3.22	0.001***
Head Age	0.01	0.01	1.11	0.268191
Family size	0.03	0.02	1.35	0.176611
Experience in livestock	-0.05	0.01	-3.43	0.000***
Family type	-0.12	0.24	-0.52	0.605829
Head education	0.06	0.02	2.96	0.003***
Herd size	-0.02	0.04	-0.58	0.561386
livestock income	0.00	0.00	5.41	0.000***
Tenural status	0.03	0.02	1.96	0.051*
Distance from city	0.06	0.01	4.38	0.000***
R ²	35			
F	9.75			
***=Significance of 1%** = Significance of 5% *= Significance of 10%				

Source: Survey Data 2015-2016

Education: Data revealed that 95 percent of the female respondents involved in livestock production were uneducated, and that's why respondent's education level was not included as explanatory variable in the regression analysis. So as women get higher education, they prefer jobs in services sector such as school teaching or nursing in a hospital. Head education level has a positive significant effect on women participation in livestock farming. Educated heads are involved in off-farm activities and thus their female members are more likely to be involved in livestock production.

Respondent's experience: It has a negative and significant coefficient, and is consistent with prior expectations. As respondent's experience in livestock farming increases, her efficiency to perform a livestock activity increases. In other words a more experienced woman can perform a livestock activity in much lesser time compared to an inexperienced one.

Family size and family type: Family size and fami-

ly type have insignificant effects on women participation in livestock production. Large sized families and combined families were expected to have positive effects on women participation in livestock production. These expectations were based on theories that in joint family system women in rural areas have more helpers in household activities so they get more time to perform livestock activities. The coefficient signs are consistent with prior expectations but they are statistically insignificant.

Credit taken: Credit taken by a family has a positive and significant effect on women participation. This is the main constraint faced by women for keeping livestock because rural women are interested in keeping livestock but economically they cannot afford them.

Herd size: has a negative insignificant effect on participation of women in livestock. As herd size increases, animals are then kept outside homes in separate farms. Women are mostly restricted to indoor livestock farming activities; therefore, their participation is limited to few activities as herd size increases.

Livestock income: Income from livestock farming has a positive significant effect on women participation. The income from livestock farming also depends on women participation, so it's a two-way relationship between both the variables.

Tenural status: it has a positive and significant effect on women participation. It means household having agricultural land will keep more livestock as compared to those having no agricultural land. The reason behind this is that they can utilize by-product of livestock in their fields and also by-products of crops for livestock feed.

Distance from city: This variable is used as a proxy for opportunity to work outside home in off-farm sector. Female in villages located close to large cities have more opportunities to work outside in non-farm sectors. In other words they are less likely to participate in agriculture activities compared to women in far distant villages. In addition, religious and social constraints also restrict them to work within homes and thus their involvement in livestock production activities increase. The estimated coefficient for distance from city is positive and statistically significant, and is consistent with prior expectations.

Conclusion and Recommendation

Based on the finding it is concluded that women are involved in almost all activities of livestock farming. The average composite index was 4.81 hours which indicate that women were on average involved for 4.81 hours per day in livestock farming activities. Similarly it was also concluded that respondent's age, education level of the head, access to credit, livestock income, tenural status and distance from city have positive significant effects on women participation. Factors such as respondent's experience in livestock production and education have negative effects on participation.

Significance of women participation in livestock industry should be recognized in government plans and policies. Non government organization, working for rural development (SRSP, NRSP, etc.) should be involved in provision of credit and livestock training facilities to rural women to encourage them to participate in livestock production. Access to credit will provide them decision power in livestock management activities.

Authors Contribution

This paper is part of the first author's PhD dissertation; the second author is her major advisor; and the third author helped in data analysis.

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