

Gender-based factors in adoption of ND and CCPP vaccines along the vaccine value chain among female smallholder farmers in Makueni County

Introduction

Small-scale livestock production plays an important role particularly in the livelihoods of the majority of rural households in developing countries. It provides livelihood activities and is an important source of income, nutrition, and draught power (Meissner et al., 2013). Meissner et al., (2013) emphasize that livestock forms an essential part of the social life and sustenance of rural households. Livestock diseases, however, have proven to be a major constraint to livestock productivity and the realization of such benefits in most developing countries (FAO, 2011). Animal extension services including vaccines are essential to protect animal health and enable a more efficient production of animal-source foods, and are, therefore, an important means to support women's empowerment through livestock (McKune et al., 2021; Mutua et. al., 2019). There however are gender-based restrictions that affect women's access to animal vaccines and this affects the potential of livestock to support women's empowerment and livelihoods.

Methodology

Context and setting

The study was carried out in Makueni County with study respondents drawn from villages in Kibwezi East, Kibwezi West and Makueni sub-counties. Makueni is largely (87%) an arid county more so the mid and lower parts. Poultry production is the most widespread livestock activity in the county given its' Arid and Semi-arid (ASAL) landscape and climate which makes it very marginal to crop production. Lower arid areas have higher average holdings (30–40 birds) per HH compared to highland areas (10-15 birds). An estimated 75 to 80 percent of all farm families in Makueni County keep poultry, mainly indigenous (Makueni CIDP, 2018).

Sampling

The study employed purposive non-probability sampling methods for FGD and IDI participants. Once the researchers were introduced to the communities by gatekeepers, mobilization was done

purposely targeting small holder poultry farmers with consideration for gender to represent men and women in the villages targeted for the study.

Data collection

Materials and methods

Qualitative methods were triangulated to collect data on the gender-based factors in adoption of ND and CCPP vaccines along the vaccine value chain among smallholder livestock farmers in Makueni County periodically between 2020 and 2021.

Focus group discussions, participatory rural appraisals and in-depth interviews complemented by ongoing observations and informal interviews have informed this report. A total of 18 focus group discussions (FGDs) and 18 participatory rural appraisal exercises (PRAs) segregated by gender were conducted with groups of 8 to 12 discussants each. The PRA exercises included pile sorting and portioning to map the division of roles and responsibilities among the small holder poultry farmer households. A total of 21 in-depth interviews targeted male and female poultry farmers to detail their decision making and ownership of poultry as well as the division of labour in the production and management.

Informed verbal consent was sought after information about the study and their participation sought, with emphasis on autonomy and the possibility to withdraw from the research activity at any time without any penalties. Permission to audio record and capture the FGD and PRA sessions in photographs was sought from all the study participants. The qualitative data was collected mainly in Kamba and Swahili languages. The qualitative data including the field notes was transcribed and translated into English transcripts for coding and analysis. Names of informants and places that were identifiers were replaced with pseudonyms on the transcripts for anonymity and confidentiality of the study participants. Once transcribed, the transcripts were reviewed for accuracy. The researchers read through the transcripts repeatedly to identify and list inductive codes. The codes were used to develop a codebook which was flexible to include new codes, delete or merge other codes as the analysis went on. There after coding was done on NVivo software to extract themes for analysis

Results

Gender roles and relations in livestock production

As illustrated in the Table 1 below, women and men play different roles in the rearing of chicken and goats with regard to division of labor in chicken production.

Table 1: Division of labor in chicken production

Chicken rearing roles	Household members (%Mean) (N=18)				
	Men	Women	Youth	Children	Joint family
Construction of chicken house	44.67	28.33	15.17	3.94	7.89
Cleaning of chicken house	1.94	55.94	20.28	16.28	5.56
Feeding	13.50	51.72	11.33	9.44	8.44
Watering	17.39	53.50	9.22	7.00	7.33
Treatment	35.22	51.33	9.72	2.72	1.00
Buying of chicken	27.50	64.56	10.06	0.00	1.17
Selling of chicken	22.50	64.56	10.06	0.00	2.89
Vaccination	25.17	38.28	6.94	5.67	1.72
Purchase of feeds	34.61	35.22	10.83	2.00	0.67
Purchase of drugs	43.78	40.67	9.44	0.00	6.11

Women take up most of the roles including ownership and decision-making in chicken production while men participate more in goat rearing. In goat and chicken production, the routine activities have been reported as being done by women. Care of sick animals, pregnant animals, processing of the milk, and sale of the dairy products is a province of women (Kinati & Mulema, 2018). In most communities, men and women have distinct roles in the caring of livestock.

For instance, Kinati & Mulema (2018), in a systematic literature review to identify points of entry for gender-responsive research and development in Ethiopia found that gender division of labor is dependent on the technology used, the farming system, the enterprise, and the household's wealth status. Additionally, religion, culture, population pressure, predominant livestock species, and stage of economic development were significant predictors of gender division of labor in livestock production in Ethiopia.

Even in mixed farming systems as in the case of the study population for the GIVE project, women are predominantly involved with the care of the animals such as cleaning of the animals, feeding whereas men's involvement is peripherally located purchase of feed, herd management, and sale of the animals. Only in milk intensified systems are men involved. Whereas men can tag along with boys

during herding, girls' involvement in herding is focused on herding small ruminants. This shows that men prefer being involved in activities that are deemed culturally rewarding such as construction, taking sick animals to the veterinary, or feeding oxen.

Decision making for ND and CCPP vaccines

As evident in the GIVE project, men are not involved in day to day activities of taking care of poultry. Their involvement comes in when the poultry are kept on large scale. Issues of best poultry keeping practices, treatment and vaccination in most cases are left to women. Sheep and goats are regarded as men's' property hence decision-making left to them as illustrated in Table 2 on the ownership and participation in decision making for goats' management. Men were also mostly involved in goat related activities in comparison to women or any other household members (Table 2).

Table 2: Summary on ownership and participation in decision making for goats' management

Goat related roles	Household members (Mean %) (N=18)				
	Men	Women	Youth	Children	Joint family
Goat ownership	51.28	19.39	8.89	1.72	18.72
Selling goats	66.56	23.39	1.83	0.00	8.22
Slaughtering goats	82.72	14.22	2.17	0.00	0.89
Selling manure	51.28	24.28	0.56	0.00	1.67
Use in dowry payment	70.83	19.83	1.67	0.56	7.11
Treating sick goats	60.22	38.17	1.61	0.00	0.00

However, since women are majorly involved on the day to day activities they can easily identify when an animal is sick then report to the husband in decision making on the best treatment option. Women are involved in day to day activities of goat rearing but the men are the ones that deal with treatment, in most of the male headed households. From the division of labor, the women and the children do more of the work and the men mostly make the decisions especially on the sale of livestock. In many cases, the women have to seek permission from their husbands to sell chickens even when they are the sole owners. Vaccination is a bit expensive and hence government programs are normally the option and men, in most cases, are the ones who take the animals for such services. This was because of institutional and socio-cultural constraints including limited educational levels, limited knowledge on financial management, bias by financial institutions, and inability of the financial institutions to appreciate the special characteristics of rural agriculture. Yet the nature of livestock production is dynamic.

Vaccine knowledge among women and how it affects their ability to use and benefit from vaccines

From the study findings, there is low vaccine knowledge among men and women small holder indigenous chicken farmers. Low knowledge levels have led women to believe that only chicks (from improved breeds) are supposed to be vaccinated and so ordinarily do not vaccinate indigenous chicken. Most of the study participants in the focus group discussions reported that sensitization projects focusing on existing groups or focusing on the elite members of the society served as a stumbling block for expanding knowledge on vaccination and vaccine use. Also, the men complained that much of the support from the NGOs or even the government mostly target women and/or women groups. Only the elite and those in groups were reported to have benefited from NGOs and governmental programs training on indigenous chicken diseases and vaccine importance and use, and the numbers were relatively low especially in Kibwezi East sub-county and some areas of Kibwezi West and Makueni sub-county - based on information from FGDs. Some of the institutions and NGOs that train farmers are FIPs, Dorcas Aid International, County Government, financial institutions such as KCB and Equity and Egerton University. It was also established that some of those that are normally trained individualize the knowledge or limit it to their group members.

Despite the presence of so many NGOs in the county that are engaging in various activities around livestock, the knowledge levels varied in the three sub-counties. In Kibwezi West sub-county for instance, knowledge on vaccines was slightly higher. This was evidenced by high number of trained community vaccinators, service providers, chicken holdings per households and high number of chicken farmers vaccinating their chicken – especially the large scale farmers. However, most small scale farmers still depend largely on herbal remedies. In Kibwezi East sub-county, knowledge levels on vaccination were very low as most of the discussants were not even aware of the existence of ND vaccines. The low knowledge levels were also characterized by the few trained community vaccinators in the area and very few farmers embracing vaccination. There are very few service providers with regard to vaccination and the extension officers are few and far apart making it difficult for the farmers. Preference of local herbal remedies for livestock disease management is still very popular among the farmers from this region.

Local beliefs around livestock vaccines

Local beliefs and attitudes about vaccines as being harmful to livestock are also a factor that influences uptake of vaccines. Resultant of the low knowledge levels of the importance of vaccines evident among the livestock farmers majority of whom are women, these beliefs and attitudes affect the use of vaccines for poultry and goat health. Beliefs that vaccines are chemicals that interfere with immune system of the chicken. These notions were fueled by minimal sensitization and awareness creation at the local community level. As a result, there is a high preference of herbal remedies / traditional methods of disease control based on the notion that they are more effective compared to the conventional vaccines. Vaccination projects and programs were viewed by the local communities as not being beneficial to their indigenous chicken but instead harmful. This is also based on previous experiences of deaths of livestock including indigenous chicken after vaccination exercises. Most of the farmers keep chickens in small scale and don't see the economic sense of vaccinating their chicken but rather go for herbal remedies and other alternative remedies. In Makueni Sub-county, vaccine knowledge was average, with few trained community vaccinators and few farmers carrying out vaccination especially the large-scale farmers. Majority of the smallholder chicken farmers made use of herbal remedies and performed other alternative practices due to the cost implications involved in vaccination.

Availability and access to vaccines

Livestock vaccine adoption is a function of access, affordability, and control. Due to different gender roles played by men and women in the community, factors influencing their adoption of livestock vaccines also vary. In a study in Mali to enhance stakeholder participation in the uptake of vaccines, Dione et al. (2019) found that the care of small ruminants is culturally associated with women and hence has limited men's participation. Yet most of these small-scale farmers are male-headed households. This implies that control over resources, including technologies like vaccines for the small ruminants, is limited as men are hardly associated with such ruminants. Moreover, even though the care of such small ruminants is a province of women, they have relatively lower access to information concerning livestock vaccines and limited time to procure the vaccines due to the triple gender burden (Dione et al., 2019). Additionally, some customary laws prohibit women from declaring or registering such small ruminants for vaccination as it is men who are heads of the family. Women are therefore forced to register the livestock in their husband's or sons' names to access vaccines. This lowers the motivation to actively participate in vaccination processes.

Regarding access, men and women have varied access to production resources. Like in the present study, women generally have limited access to resources than men, even worse for female-headed households who lose access when the male counterpart is lost (Kinati & Mulema, 2018). The last couple of decades have been marked by widespread adoption of livestock technologies to enhance production in developing countries. Whereas this has had an impact on livelihoods, many believe that much more can be achieved through a better-targeted intervention. These interventions should be based on the socio-cultural nature of the target community, as this is the bedrock upon which decisions concerning livestock production are made. Vaccination is the most reliable method of safeguarding livestock against various forms of diseases (Bett, 2019).

The cost of purchase and transportation of the vaccines

Vaccines are expensive and the sources of income are seasonal and not reliable and poverty levels are very high. In our study settings, vaccines were packaged in large quantities not accessible by the small holder farmers. The least vaccine dosage is for 50 chickens making it uneconomical or unaffordable for small scale farmers. Women are mostly affected because they have to forgo other household needs to be able to afford the expenses associated with chicken vaccines including the cost of purchase and transportation given the low socio-economic status of the study population. In the present study, high poverty level was evident in Kibwezi East; an area that also has harsh climatic conditions and thus farmers don't rely on crop farming but rather on casual employment which is difficult to come by and therefore with the little income, it becomes difficult to prioritize vaccines over other household needs. Transportation cost for the vaccine is high especially in Kibwezi East sub-county, where there were few agro-vets dispensing the vaccines, poor road network and far much larger distances between vaccine stockists and the farmers. Further, there were few service providers and they were based far from the farmers making it expensive for the farmers to reach them as they had to bear the transport cost for the vaccinator plus the vaccination charges per chick or chicken. From the GIVE project participatory mapping exercises, about 3 of the male groups' participants reported that all decisions on vaccination are made by men because mostly they are the ones who provide the money to be used to buy vaccines and also culturally they are the heads of their families.

The need for cold chain to transport the vaccine as well as the long distances to access the vaccines are some of the factors that are also compounded by women's limited mobility. Women small holder livestock farmers in the study setting have to find extra resources to access a means of transport to the vaccine stocking outlets. This resource is accessed by asking from their husbands to directly

support their mobility or even depend on the men to go fetch the vaccines. This may be possible or not depending on the level of awareness and perception on the importance of the vaccine by the men and thus their willingness to facilitate the women.

Socio-cultural constraints

A number of socio-cultural constraints that normally limit women's participation in household decision-making are replicated in the vaccine value chains as was evident in the present study. As a widely accepted norm in most non-industrialized societies, women's subordinate position hinders them from leveraging available opportunities. For instance, in a study in Senegal to understand gender and intersectionality in livestock vaccines value chains, McKune, Serrah, & Toure (2021) found that whereas training opportunities were offered to both men and women, few women took such opportunities due to limited educational levels. Other reasons given for this included women's limited upward mobility. Of the 22 veterinarians in the region surveyed, only four were women, in the lower cadres. Most of the women interviewed revealed that women are mostly found at the base of the vaccine chains, mostly as vaccine consumers. With a national literacy level of 40% for women and 60% for men, the low literacy levels limit women's ability to document their livestock activities. Such training is important not only to increase technical know-how but the ability to communicate with their husbands, who control production assets, to garner most support in participating in vaccine value chains. This reliance on men for mobility-related issues is even worse for women in the remote rural areas where socio-cultural constraints are more pronounced (McKune, Serrah, & Toure, 2021). Socio-cultural constraints are limiting for women to the extent that women who would want to use motorbikes for easier mobility are seen as acting culturally inappropriately. For those who go ahead to use them, they are required to be accompanied by a man. The present study also revealed that women's limited participation in vaccine value chains is because it is not culturally sanctioned for women to do what men do.

Conclusion

Limitations posed on women's mobility, the high cost of vaccines challenging access and affordability, gender roles that define decision making power, local beliefs about vaccines, low levels of vaccine knowledge as well as social cultural constraints that challenge the agency of women make it difficult for women livestock keepers to access vaccines as well as extension services, information, training and markets. These limitations consequently challenge women's potential to raise healthy and productive

livestock for sustainable livelihoods and empowerment. Empowerment of women is more likely to encourage adoption of new agricultural technologies and approaches.

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