Study Cover Sheet
January 2018

Comparing smallholder poultry husbandry practices between adopters and non-adopters of Newcastle Disease vaccine in India

At a glance

Aim of study	Assessing whether there is any relationship in smallholder poultry production between the use of the Newcastle Disease (ND) vaccine and other improved poultry practices. The study aimed to look for quantitative comparative data on husbandry practices of vaccine adopters vs non-adopters, to attempt to ascertain poultry improvements in the groups.
Field study dates	March 2017 – April 2017
Location	India (State of Jharkhand) Churchu and Dadi blocks of Hazaribagh District Mandu Block in Ramgarh District
Total sample size	Total households in GALVmed Market Development ND intervention areas 400: 200 adopting households 200 non-adopting households

Study Outputs Available on GALVdox

- Study write up
- Raw data files

Strategic Context - why did GALVmed undertake this study?

Is there a relationship in smallholder farming between the use of a key animal health input and the wider use of other essential inputs and husbandry practices?

This study examined this basic question by looking for any relationship between the use of the ND vaccine by smallholder poultry farmers and other poultry inputs and practices that are considered important in a smallholder setting. The information from this study could be useful for GALVmed in two important areas:

i) Informing a strategy for market development: should market development initiatives for improving animal health be accompanied by wider husbandry extension activities, or does this occur 'naturally' to any extent?
ii) Understanding impact: when comparing the productivity of adopters and non-adopters of an essential animal health input, is any observed difference likely to be significantly influenced by the usage of other products and practices?

These questions are important for GALVmed and represent an area where many contrasting opinions and anecdotal observations are offered. This study is a first step in bringing quantitative evidence to the debate. However, it does not address any aspects of causation behind the possible relationships; this is therefore a potential area for future studies.

The study was conducted in Tanzania and India. Please refer to the Coversheet "Comparing smallholder poultry husbandry practices between adopters and non-adopters of Newcastle Disease vaccine in Tanzania" for the Tanzanian headline observations.

Headline Observations

- The Indian study identified three different types of adopters of ND vaccines:
    - **Non-adopters** were typically located in villages that had no coverage by community vaccinators. These farmers therefore had no direct access to ND vaccines and were not sensitised to their existence.
    - **Bad adopters** were either in villages that had only recently (in the past year) been covered by community vaccinators, or they did not regularly comply with vaccination rounds.
    - **Good adopters** had complied with at least two rounds of ND vaccination during the last year (2016).

Table 1 is a summary table comparing non-adopters vs good adopters survey outcomes.

Outcome	Non-adopters	Good adopters	Statistical significance
Mean flock size	11.2	17.6	$p < 0.001$
Keeping improved breeds	3.1%	0%	-
Treating chickens with dewormers	5.3%	92.5%	$p < 0.001$
Vaccinating against fowl pox	0.4%	73.3%	$p < 0.001$
Mean investment in medicines or dewormers (three months' expenditure)	0.09 USD	0.19 USD	$p = 0.007$
Providing supplementary feed	74.2%	83.3%	$p = 0.06$
Mean expenditure on feed during the previous three months	3.74 USD	4.81 USD	$p < 0.001$
Using a poultry house	67.6%	26.7%	$p < 0.001$
Mean number of chickens consumed during the previous three months	1.00	1.85	$p < 0.001$
Mean number of chickens sold during the previous three months	0.35	1.35	$p = 0.001$

Table 1: *Summary table of results described in the write up.*

- A few differences in husbandry were observed. Some specific points were:
    - Good adopters spent more on medicines and were more likely to use dewormers and fowl pox vaccines.
    - Good adopters spent more than non-adopters on poultry feed. Use of mineral supplements was very low amongst both groups.
    - Adopters were more likely to house their chicken in the family home. Non-adopters more frequently used poultry housing.
    - Among good adopters, the principal limitation on growing the flock size was money; for non-adopters, the main limitation was disease and predation.
- The study did not attempt to establish the nature of the relationship (i.e. whether there was any degree of causality).
- In addition to the husbandry practices described above, in general, respondents that vaccinated:
    - Were typically employed only in farming crops, livestock and chickens; non-adopters were more likely to be employed elsewhere.
    - Were more likely to also keep other livestock species – in particular buffalo and pigs, and greater ownership of goats.

- Owned flocks that were around 50% larger, with an increase in the proportion of hens, as opposed to cocks, in their flocks compared to the flocks of non-adopters.
- Sold and consumed more chicken

In summary, it is important to note that the nature of ND makes a relationship between vaccination and improved husbandry practices likely. Few livestock diseases are as widespread and result in such heavy and rapid losses as ND. Smallholders are typically acutely aware of the disease and it would therefore seem logical to expect that they would consider investment in their flock (in the form of better housing, feeding, breeding etc) as a highly risky undertaking without ND vaccination.

Comparison between the Tanzanian and Indian Studies

It is evident that, while a relationship between ND vaccination and improved husbandry practices exists in both locations, the relationship is considerably stronger in the Tanzanian study. The reason for this difference is thought to possibly lie in the different scales of poultry operation evident between the two sites. In Tanzania the average flock size of good adopters is 29.9 while in India it is 17.6. The key observation here is that Indian smallholder ND adopters cite money as the primary constraint for flock expansion. This is not the case in Tanzania where adopters continue to cite disease (possibly those other than ND) as the primary constraint. This suggests that the poultry production demographics in India are such that, past a certain flock size, significantly greater investment is required (probably in land / housing and food) and that this is not a viable option for most smallholder households. In Tanzania, where a different set of production demographics pertains, this threshold or constraint is not apparent. Flock sizes can therefore increase and, with this increase, improved husbandry practices become more evident.

Further Studies

As this study was a first step in collecting quantitative evidence comparing smallholder poultry husbandry practices between adopters and non-adopters of ND vaccine, it did not address any aspects of causation behind the possible relationships. A follow-up study (possibly undertaken by an academic institution interested in this area) to that effect could be a potential area for future work. The outputs from this study will be incorporated into subsequent impact modelling exercises where the beneficial impact of a portfolio of products will be considered.

Cross Reference: Other Related GALVmed M&E Studies

Study	Relevance
ND Vaccine Dividend Study (Tanzania)	Comparing smallholder poultry husbandry practices between adopters and non-adopters of ND vaccine in Tanzania. Adopters and non-adopters data collected.
Poultry Productivity Studies	The Poultry Productivity Studies are impact / productivity related studies looking to make a direct comparison between ND vaccine adopters and non-adopters. Adopters and non-adopters data collected.
Poultry Productivity Changes and ND Vaccine Studies	These studies are before and after comparisons of poultry production in smallholder households associated with the GALVmed PL2 Market Development field projects. Adopters and non-adopters data collected.
ND Pilot Project Durability Assessment	This study assessed the long-term commercial viability of the ND vaccine supply chain. Adopters and non-adopters data collected.