Investigating Practices and Attitudes of Medium to Small-Scaled Poultry and Pig Farmers and Veterinary Drug Suppliers towards Antibiotics Usages and Alternative Practices in Nan Province, Thailand

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Introduction

- Antibiotics have been widely used in veterinary medicine and they have provided great benefits to the health animals all over the world (Ventola, 2015).
- The overuse and misuse of antimicrobial in food-animal farming have led to the increasing number of resistant bacteria (World Health Organization, 2014).
- In Thailand, antibiotics are commonly used in food animal farming for many purposes which is the main reason for disseminating AMR to animal production system.

Introduction

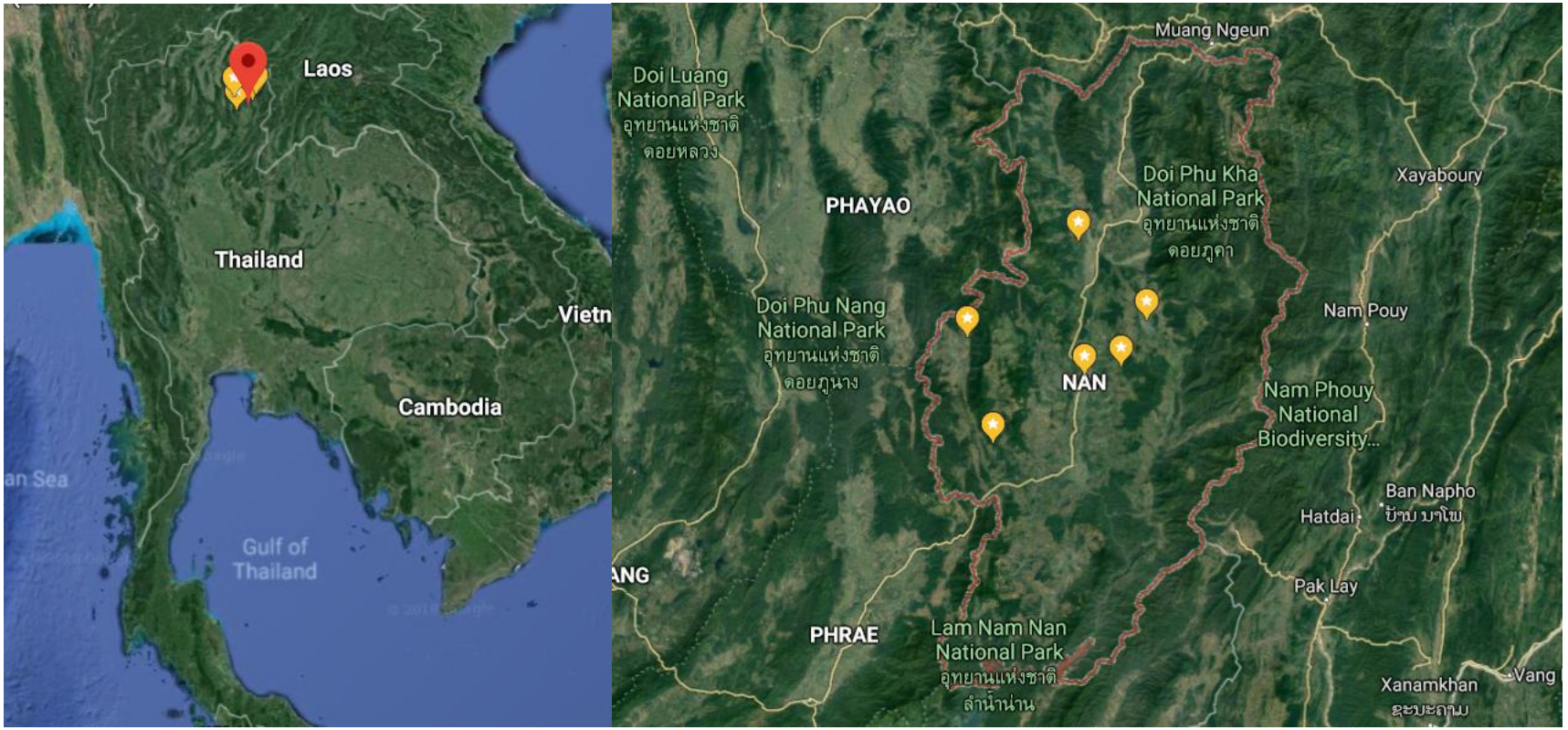
- Rational decision-making processes involving beliefs, attitudes and intentions contribute to decisions; to use antibiotics or to prescribe or to dispense (McIntosh & Dean, 2015).

- To understand the practices of uses, attitudes of farmers and drug sellers face to the risk of resistance (for them and their animals) and their beliefs related to alternative practices.

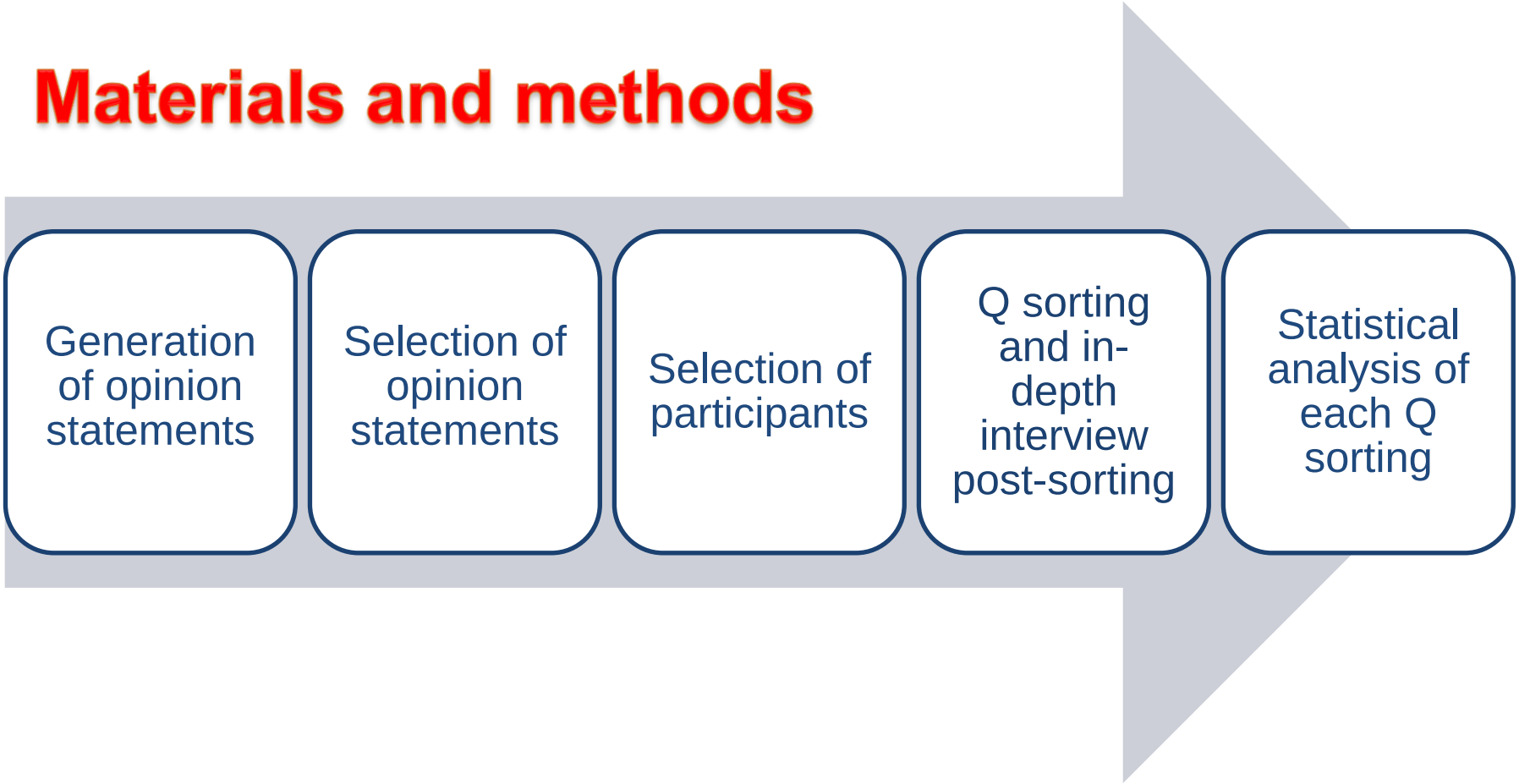
- A sociological approach, Q methodology, which allows the analysis of the subjectivity of individuals facing a common situation (Brown, 1980).

Materials and methods

- **Study area**: Six districts in Nan Province, Thailand
- **Duration**: 5 months



Materials and methods



Materials and methods

Generation of opinion statements → Selection of opinion statements → Selection of participants → Q sorting and in-depth interview post-sorting → Statistical analysis of each Q sorting

i. Literature review
ii. Participatory epidemiology
   - semi-structured interview
   - 10 farmers and 10 drug suppliers

Materials and methods

Generation of opinion statements

Selection of opinion statements

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InterRisk

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Materials and methods

Generation of opinion statements

Selection of opinion statements

Selection of participants

Q sorting and in-depth interview post-sorting

Statistical analysis of each Q sorting

- 40 to 50 statements will be produced
- Different topics will be addressed;
  - (i) their confidence in antimicrobial
  - (ii) logistics/organization of antimicrobial use in the field
  - (iii) cost of the antimicrobials used
  - (iv) laws and regulations
  - (v) impacts of antimicrobial use

InterRisk

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Materials and methods

Generation of opinion statements

Selection of opinion statements

Selection of participants

Q sorting and in-depth interview post-sorting

Statistical analysis of each Q sorting

- A total of 72 participants; 36 farmers and 36 vet drug suppliers will be randomised selected and invited to participate in the Q sorting.
- Participants will be randomised proportional selected to form a heterogeneous group in order to capture the points of view of various types of respondents.
- Contact with local authorities will be taken prior any participants inclusion to get the approval of the authority and the list of people to be included in the two target groups.

InterRisk

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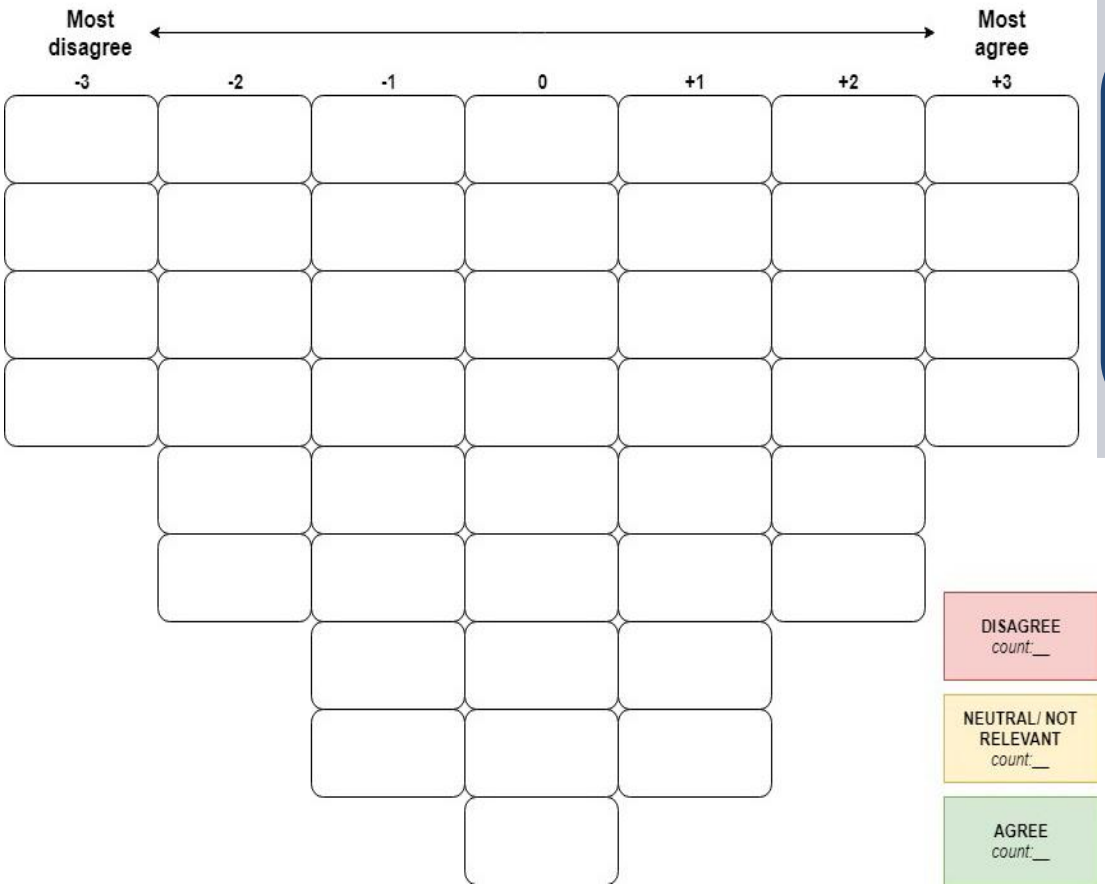
Materials and methods



Q sorting and in-depth interview post-sorting

Statistical analysis of each Q sorting

InterRisk

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Materials and methods

Generation of opinion statements

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Q sorting and in-depth interview post-sorting

Statistical analysis of each Q sorting

- Every interview will be transcribed into a word format for qualitative analysis.
- Data collected from Q sorting game will be analyzed using principal component analysis tool in the “FactoMineR” package (Husson, Lê, & Pagès, 2011) and “qmethod” package (Zabala, 2014).

Preliminary results

- Attitudes and practices of local farmers
  - Antibiotics usage
  - Alternative treatment

- Attitudes and practices of veterinary drug suppliers
  - Feed and vet drug stores
  - Veterinary drug stores
  - Animal health volunteers

Preliminary results
Attitudes of farmers toward antibiotics

- They trust in the safety of antibiotics performance and suppliers
- Available but some products are too expensive
- Good farming practices such as biosecurity is important but it is impossible to do pig and poultry farming without antibiotics use.
- Giving low dose of antibiotics during season change could help prevent animals being sick.
- Giving over dose of antibiotics to animals could increase the treatment effectiveness.
- Agree with the regulations to become effective
- Some medicinal plants and ethnoveterinary knowledge

Preliminary results
Practices of antibiotics use of pig & poultry farmers

- Source of advices: internet and social media, friends, feed sellers, drug sellers, and vets.
- Most farmers prefer purchasing antibiotics and using it by themselves.
- Most of them concern withdrawal time of drugs.
- They tend to use only when they notice some symptoms.
- Pig farmers prefer injectable while poultry farmers like water soluble antibiotics.
- There are some interesting use of medicinal herbs and local wisdom.

Preliminary results
Alternative practices of pig and poultry farmers

- Giving guava's leaves or raw banana could mitigate and treat diarrheal pigs.
- Oral rehydration salts or electrolyte powder packets

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Preliminary results
Alternative practices of pig and poultry farmers

- Giving curcuma or cassumunar ginger could mitigate and treat dysentery in poultry.

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Preliminary results
Alternative practices of pig and poultry farmers

- Giving green chiretta or heart-leaved moonseed could mitigate and treat flu in pigs and poultry.

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- mixing effective microorganism with animal feed could help prevent sickness in pigs and poultry.

Preliminary results
Attitudes of vet drug suppliers towards ABOs

- Trust in ABO performance and drug distributors
- ABOs are available countrywide
- Affordable and the price depend on quality
- Only legally registered products
- Ineffective treatment does not come from the antibiotic performance/ properties.
- Impacts are the residues ←→withdrawal period
- Believe in the existing of antibiotics resistance which is a consequence of misusing
- Support the regulation but concern about inconvenience
- ABOs are better than alternative treatment.
- Good farming practices are more important that ABOs.

Preliminary results
Attitudes and practices of feed & vet drug stores

- Antibiotics for animals are normally sold almost every animal feed stores.
  - Antibiotics solutions, medicated feed and injectable type
  - Therapeutic and non-therapeutic
- None of the dispensers is a veterinarian
  - Health care advisors and dispensers
  - Advices for customers are from the regional feed distributors and their experiences
  - The request of farmers/ customers

  "Normally they ask for what they want and I sell it. We don't really talk much."
- Giving low dose of antibiotics during season change could help prevent animals being sick.

Preliminary results
Attitudes and practices of veterinary drug store owners

- Majority of the products is therapeutic injectable antibiotics for many kinds of animals ←→ regional vet drug distributors

- Most of them are/ used to be governmental veterinary officers
  - Health care advisors, prescribers, users and dispensers
  - History and other relevant information taking → tentative diagnosis
  - Advices of proper treatment procedure and storage
  - Advices for customers Whole package or division
  - Emphasizing biosecurity and prevention measure
  - Prefer long acting ABO and never suggest alternative treatment

Preliminary results
Attitudes and practices of veterinary drug store owners

- Constraints in antibiotics use

  "I know it's not a good practice to sell and let the farmers treat their animals by themselves. Though I teach them, they sometimes misuse. But it is necessity due to some constraints like distance, duration and extra expense. What would you do? Would you charge them? I can't, I sympathize with limited budget farmers."

  "Prices are different but I sell with reasons. Enrofloxacin A cost 1,400฿, another cost some hundreds. So which one has higher quality, you know. But what if a farmer has 2 sows, would you give him the 1,400 baht bottle?"

- Constraints in laws and regulations

  "Nan is a small town where everyone know each other in their area. That's why it's very difficult for vet authorities to inspect illegal antibiotics and drug store license. They would think that I want to eliminate my business competitors and I will be in a trouble."

Preliminary results
Attitudes and practices of animal health volunteers

- They are trained by the District Veterinary Officers
  - Every sub-district or commune
  - Health care advisors, antibiotics users and dispensers
  - Relationship and interaction with local farmers
  - Antibiotics are from feed & drug stores.
  - Emphasizing biosecurity and prevention measure

- Antibiotics resistance standpoint and influencing factors

  "Sometimes I am a part of increasing antibiotics resistance. It sometimes doesn't effective, then I add more volume. I confess I used to do it."

  "If I see the animal is severe, I pick higher generation of antibiotics. Gotta do like this."

Discussion & Conclusion

- To minimize the production cost and maximize the profit
  - Separate sick animals immediately
  - Farmers are likely to use medicinal plants to treat their animals as a primary care prior to antibiotics.
  - Antibiotics are used mostly for therapeutic purpose
  - They tend to be influent by vet drug sellers on antibiotics uses
  - Farmers shop around for the affordable antibiotics
  - Some use illegal antibiotics
  - Some sell out the animals after being failed from ABOs treatment

- Farmers are likely to believe that they are not involve in antibiotics resistance because they do not use much of it.

Discussion & Conclusion

- Most medicinal plants investigated are for human medicine, and local farmers mimic the properties of those in animal health.

- Factors influent antibiotic users, prescribers and dispensers
  - Customers/ farmers expectation
  - Incentives and profits
  - Beliefs and intention

- Veterinarian mostly rely on scientific knowledge and their experience while animal health volunteers and vet drug sellers have some of their own beliefs.

- None of them mention about proper antibiotics disposal and impacts to natural resource and environment

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