Risk’s Perception of Antibiotic Use in Pigs and Poultry farms in Madagascar - A Q Method Approach

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Introduction

Antimicrobial resistance (AMR) is a One Health issue that needs to be tackled worldwide. In Madagascar, little is known about practices related to antibiotics (AB) and AMR in breeding system. To implement effective communication strategies, practices and perception related to antimicrobial use (AMU) at smallholder farms level need to be better understood.

Our study aims at identifying patterns of practices and perception of usage of antimicrobials or their alternatives and related risks amongst pigs and poultry smallholders, and drug sellers in the commune of Imerintsiosaka, central part of Madagascar.

Materials and Methods

Study zone and population

The study was conducted in Imerintsiosaka 30 km far from Antananarivo, the capital and included six urban and five rural fokontany (basic unit administration) (fig. 1). The two populations were: breeders of pigs and/or poultry of the commune and drug sellers, including veterinarians, technicians and other salesman in connexion with the breeders.

Q Methodology

Q Methodology belong to participatory epidemiology. It is a semi-qualitative method that studies the subjectivity of individuals regarding a subject. The main objective is to identify group of individuals sharing the same point of view and to determine commune and distinguish opinions on a same subject (2). Q methodology follows five steps (3):

Step 1: generation of the concourse (list of statements) from literature review and semi-structured interview (SSI).
Step 2: construction of a set of statements (the P-set).
Step 3: selection of the respondents (the P-set) according to socio-demographic criteria.
Step 4: ranking of the Q-set (the Q-sorting) in a 7 grades grid (forced distribution) from -3 (totally disagree) to +3 (totally agree), during a face to face interview. It is followed by a SSI about extreme statements (fig. 2).
Step 5: analysis of the factors by Principal Component Analysis (PCA) using “gmetad” package for R with respondent considered as variables and interpretation.

Results

Q-set and P-set

The Q-set was built of 38 statements for breeders and 45 for drug sellers. The P-set included 26 breeders and 19 drug sellers with various socio-demographic criteria.

Consensus statements

Consensus statements are statements shared by all respondents (no statistical differences between any pair of factors). Consensus statements with extremes values are presented in figure 3.

![Figure 3: Main consensus statements](image)

Discourses

The analysis of factors is based on the statements with extremes values (-3, -2 and +2, +3), the distinguishing statements (score value significantly different between each pair of factors), and the contents analysis of each individual interview.

![Figure 4: Q-sorting of discourse A in breeders and drug sellers](image)

Regarding AMU, AMR and alternatives the breeders and drug sellers were divided into three discourses following PCA, explaining respectively 57% and 60% of total variance:

A. “confidence in antibiotics” (13 breeders and 6 drug sellers): use of AB as preventive measure, have a poor knowledge regarding AMR and a low trust in alternatives;
B. “belief in alternatives” (7 and 7 individuals): preventive use of AB is perceived as a main problem for AMR and they believe in alternatives such as vaccines to be useful preventive methods;
C. "moderate toward antibiotic use" (6 and 6 individuals): have a fuzzy opinion regarding AMU and AMR.

Conclusions

The presence of three main point of views offers the possibility to adapt the awareness messages. The group “belief in alternatives” can be also explore as an example to reduce the use of antibiotics for the two other groups. This study showed different practices and risks perception toward AMU that need to be better characterized and precisely quantified.

References: