

# Food safety risk communication: A One Health approach to improve knowledge and practices along pork value chains in Vietnam

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## Introduction

Food safety has attracted great public concern worldwide and ensuring food safety requires multi-sectoral collaboration. One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems[1]. It mobilizes multiple sectors, disciplines, and communities to work together to tackle threats to health and ecosystems, while addressing the need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development. A One Health Joint Plan of Action was launched in 2022 by the Quadripartite – the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), the World Health Organization (WHO), and the World Organisation for Animal Health (WOAH, founded as OIE). This considers food safety to be one of six essential areas needed to safeguard the health of humans, animals and the environment[2]. Risk analysis is the gold standard approach to assuring food safety and is traditionally considered to comprise food safety risk communication (RC), risk assessment and risk management (CODEX). Risk communication, in particular, plays a crucial role to disseminate the information and knowledge on risks amongst scientist, managers or policy makers and community. This study aimed to improve food safety knowledge and practices among pork value chain actors, relevant stakeholders, and consumers to prevent foodborne illness using risk communication.

## Materials and Methods

Participatory trainings, group discussions, meetings, posters and leaflets, and loudspeaker campaigns were conducted during the course of study from November 2019 to June 2022, in Hoa Binh, Hung Yen and Nghe An provinces in northern Vietnam. Participants were first gathered in a meeting room for a training, comprising presentations, group work, and games to increase knowledge about food safety: specifically covering food safety hazards, different biological contamination pathways, causes and consequence of food borne illness, and, how to minimize the contamination related to pork. The training section included handouts, handbooks, practice guides, and equipment to improve food safety targeted to different stakeholder groups. At training of trainers (TOT) sessions for local authorities, beside getting overall information for food safety, authorities were exposed to risk-based approaches in food safety, practiced food safety risk communication, and developing the communication content to use in their day-to-day activities. Posters and leaflet on food safety practices and food borne illness prevention were distributed to the participants and studied communes. Lastly, loud-speaker (radio broadcasting) campaigns were carried out in the selected districts to reach communities in different days and weeks over a 2-month period. The contents of the training and communication materials were also derived from recent food hazard and intervention studies conducted by the study team and were presented as case studies which illustrated hazards (e.g., biological, chemical) and risk factors for contamination, or successful intervention measures. Before and after training evaluation was also carried out to assess the understanding of food safety knowledge and practices of the participants

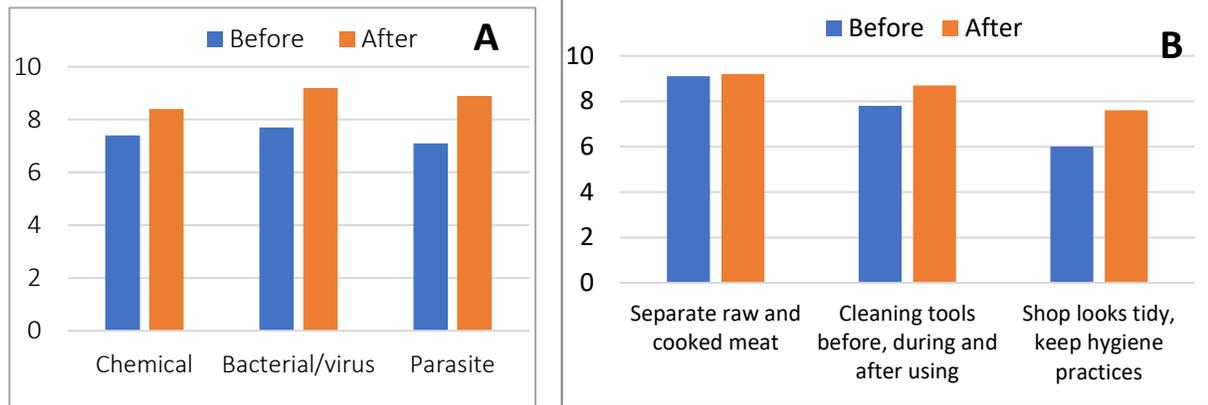
## Results

A total of 700 value chain actors (slaughterhouse workers, pork retailers), local veterinary and health workers, local authorities' staff, and consumers in the three studied provinces participated in the food safety trainings. Knowledge and practice scores of pig value chains actors (slaughterhouse workers and retailers) on food safety improved. Trained local veterinary and health workers, and local authority staff improved at managing and disseminating food safety information and training during their work. Different trainings conducted by the trained staff to the consumers were rolled out at districts and communes. Consumers showed higher attention to the risk of biological hazards and cross-contamination pathways related to animal source food during purchasing, preparation, and consumption of pork. Related to loud-speaker campaigns, these were 64 broadcasted times, and were estimated to reach approximate 45% of the district population (equal 120,000 community members, include 70,000 women, Table 1).

**Table 1.** Number of participants from different groups to attend food safety training and risk communication

Targeted groups	No. participants (No. women)	Topics in risk communication messages to improve
Pig producers	119 (94)	Improve food safety knowledge and hygiene practices related to their daily work, such as pig producers, slaughterhouse workers, consumers, canteen staff
Slaughterhouse workers	43 (11)	
Pork retailers	30 (21)	
Consumers	191 (175)	
Canteen staff	142 (129)	
Local authorities (TOT)	175 (88)	Food safety knowledge, risks and conduct risk communication
<b>Total</b>	<b>700 (518 women, 74%)</b>	
Media (journalist)	Two workshops with media (2019 and 2022), over 100 participants related to food safety risk communication	
Loudspeaker campaigns (broadcasted 64 times)	Reach approximate 45% district population (120,000 community members, include 70,000 women) received information about food safety knowledge, hygiene practices	

Perceive risk and the burden of different food borne hazards of participants were improve after training compared to before the training (ranks from 1-least to 10-most important, \*p<0.1, Figure 1A). The changes in knowledge and practices to improve food safety of value chain actors were also obtained from participants after training compared to before the training (ranks from 1-least to 10-most important, \*p<0.1, Figure 1B).



**Figure 1.** Perceive risk of food borne hazards and changes in knowledge and practices to improve food safety of participants before and after training.

### Discussion

This research has highlighted the integrated approach that used food safety training and risk communication along the traditional pork value chain in Vietnam and similar context, to improve food safety understanding, awareness, and practices for different relevant actors and stakeholders. The small or traditional pork value chain actors who actually have few opportunities to continuously update and be trained to improve food safety knowledge. While, knowledge and practices of actors involved in traditional pork chains were often learnt from others team's members, "*learning by doing*", and through their experience [3]. Through participating the trainings and risk communication activities, farmers, slaughterhouse workers or vendors could receive information from research groups and expertise and avoid the misunderstanding or incorrect information about food safety thought many channels [4].

In practice, regulations and laws requires the need to maintain and organize training sessions on food safety knowledge and practices for people involved in food production and processing, however for small and medium scale, they have few opportunities to participate in and acquire knowledge and practices on food safety. Therefore, investing, and prioritizing resources for training and implement food safety risk communication along the traditional value chains is also necessary in improving knowledge and hygiene practices of the value chain actors. The present study also interacted and trained local authorities who involved in the food safety management process, so that they can make decisions based on the principles of risk-based approach, where risk communication plays a key role in disseminating food safety information and intervention measures [5].

Through the different media channel, journalist often report food safety events and/or food poisoning cases to the public. Their message tends to make people attract to their news by extrapolate the title or exaggerating the content, while the actual situation might be less serious than that and create the anxious of public as consequences. Through the study, the interaction, training and discussion amongst food safety researchers, experts, managers, and journalists would equip and update skills and understanding in the process of communicating food safety messages. The training section facilitated participants shared and exchange detailed on the food safety problem, what is the evidence, risk factors etc., so that journalist could convey information in understandable language without confusing or making consumers panic.

### Conclusions

This study showed the feasibility and effectiveness of a multi-disciplinary and whole value chain approach to food safety. Messages were targeted to actors from the farm to the fork (risk-based

approach) and involved human health, animal health and agriculture disciplines (inter-disciplinary approach) as well as scientists, communities and authorities (trans-disciplinary approach). The improvement in knowledge and practice supports hypothesis that a risk-based, One Health approach, can create an effective channel to convey food safety knowledge and practices to targeted value chain actors and communities to reduce risk foodborne illnesses for consumers.

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