



Gender roles in the perception of safe pork and its organoleptic characteristics in Vietnam

Nguyen Thi Minh Phuong, Pham Van Hung, Pham Duc Phuc, Le Thi Thanh Huyen, Jenny-Ann Toribio and Fred Unger

Key messages

- Gender roles influence how both men and women perceive safe pork.
- Men and women indicate different organoleptic characteristics of healthy pork with women revealing more sensory attributes than men.
- Safe pork is socially constructed because food safety awareness and compliance rules are a process of social actors interacting and exchanging knowledge and experience.
- Research shows a knowledge gap in the perception of safe pork among women and men pork value chain actors.
- Governments need to take active measures to close the knowledge gap between scientific and managerial food safety and the efficient practices of societal food safety.

Introduction

The Vietnamese food system is experiencing rapid changes and faces numerous food risk challenges. Despite long-term societal interest in food safety, knowledge gaps still exist between the scientific knowledge of food safety, societal practices and food-related communication messaging (Hung Nguyen-Viet et al. 2019; Cook and Phuc Pham-Duc 2019). Therefore, it is vital to understand the concepts and practices of social groups and how they contribute to improving food safety in the country.

Women and men participate in all nodes of the pork value chains and influence value chain upgrading differently in Vietnam (Nga Nguyen-Thi et al. 2022). Numerous studies show women and men have various perceptions, attitudes, beliefs and practices regarding meat (Kubberod et al. 2002; Hung Nguyen-Viet et al. 2019; Ritzel and Mann 2021; Ishra et al. 2022; Nga

Nguyen-Thi et al. 2022). In this study, a gender lens was used to understand the perceptions of safe pork among value chain actors and how women and men differentiate pork through organoleptic characteristics.

Data and methods

This study used data from 449 semi-structured interviews (key informant interviews - KIIs) on food safety in Hoa Binh, Hanoi, Hung Yen, and Nghe An in 2019. The respondents (87 men and 362 women) were pork value chain actors, such as pig producers, slaughterers, retailers (pork vendors at traditional markets, boutique shops, supermarkets and convenience stores), processors (street food and canteens) and consumers. In addition, the research team used the transcripts of six focus group discussions (FGDs) on pig producers in Hung Yen and Nghe An in 2018.

Gender and perception of safe pork

'You should buy pork at a familiar stall, so if something happens, you can find the vendor.' (FGD of male and female pork producers, from Hung Yen)

'The slaughterers' conscience is key. However, I can only practice what I see, and feel is safe. Testing by machine may not be safe.' (KII of a slaughterer, male, slaughterhouse, from Nghe An)

Table 1. Men's and women's perceptions of safe pork

	Men		Women		Total	
	N	%	N	%	N	%
Guaranteed pig livestock	11	45.8	64	55.7	75	54.0
Don't slaughter sick or dead pigs	12	50.0(a)	32	27.8	44	31.7
No antibiotic residue	1	4.2	9	7.8	10	7.2
Clean, hygienic slaughtering	3	12.5	33	28.7(b)	36	25.9
Guaranteed transportation	0	0.0	10	8.7	10	7.2
Certified safe pork	3	12.5	5	4.3	8	5.8
Clean pork stalls	2	8.3	17	14.8	19	13.7
Selling derived pork	0	0.0	13	11.3(b)	13	9.4
Fresh flesh, white fat, limber, no smell	9	37.5(a)	20	17.4	29	20.9
Proper preservation of pork	0	0.0	16	13.9(b)	16	11.5
No bacterial infection	0	0.0	3	2.6	3	2.2
Not rancid	2	8.3(b)	2	1.7	4	2.9
Other	0	0.0	1	0.9(b)	1	0.7

(a): $p < 0.05$

(b): $p < 0.1$

Table 1 presents the safe pork perceptions of male and female pork producers, slaughterers, and retailers.

Perceptions generally focused on 'guaranteed pig livestock' (54%), 'don't slaughter sick or dead pigs' (31.7%), and 'clean, hygienic slaughter' (25.9%). Guaranteed pig livestock means pigs are fed traditionally with available crop feed from diverse sources, rice bran, and without using (or just a little) industrial feed. Pork from pigs raised this way is considered clean meat. Guaranteed pig livestock also means not using banned substances, growth hormones or lean substances mixed in animal feed; keeping pigs and stables clean; and not injecting sedatives. Some respondents answered pork is safe when pigs have 'clean pork stalls' (13.7%). Notably, the perception that safe pork has 'no bacterial infection' has a shallow response rate (2.2%).

Safe pork perceptions reflect the gender roles in the pork value chain and differ considerably for selected criteria. Men consider safe pork is not from sick or dead pigs. The percentage of men with this view is higher than that of women (50%, 27.8%, $p < 0.05$). Furthermore, men think safe pork is fresh flesh, white fat, limber, with no smell. In this opinion, the rate of men is also higher than the rate of women (37.5%, 17.4%, $p < 0.05$). Regarding the role of slaughter in the supply chain, men tend to perceive safe pork as meat they can verify with their slaughtering knowledge and experience. Meanwhile, in the criteria of safe pork, such as clean, hygienic slaughtering, selling derived pork, and guaranteed preservation, the percentage of women with these perceptions is higher than that of men ($p < 0.1$). As retailers, women pay attention to the requirements of selling sourced pork, good preservation, and hygienic slaughtering – a junction slaughterhouse workers are responsible for.

Overall, a gap in women's and men's perceptions of safe pork still exists. Both of them consider livestock inputs, slaughter of healthy pigs, and only partly the hygiene issues (the poor practice), without mentioning good practices to reduce bacterial infection in slaughtering, transporting, or selling pork.

Organoleptic characteristics

Numerous studies show consumers rely on their senses when selecting pork. People prefer to buy fresh red meat that is firm, slightly sticky, elastic, limber, clean, thick and not wet (Nga Nguyen-Thi et al. 2015; Hung Nguyen-Viet et al. 2019). Research by Grunert et al. (2015) showed that Chinese consumers pay more attention to meat colour and fat cues than brand, origin and certification signals. In Uganda, consumers look for signs that the meat has blood inside to indicate freshness (Roesel et al. 2019).

In samples collected by the SafePORK team in Vietnam, 34 men and 189 women reported organoleptic attributes about unsafe pork through smell, colour, and physical shape. To compare women's and men's

opinions, the team randomly selected 34 women's comments from 189 women. While selecting unsafe pork organoleptic characteristics, respondents also identified traits of fresh pork. Each sensory attribute was assigned a code and inputted into a computer. Data processing shows 68 people gave 47 words/phrases expressing organoleptic characteristics of unsafe pork and 18 words/phrases for fresh pork. These characteristics are classified, reorganized, and presented in Table 2.

Table 2. Organoleptic characteristics of unsafe and fresh pork in the respondents' opinion

	Colour	Smell	Physical shape of meat
Unsafe pork	Colour is not bright, discoloured Pale colour (discoloration, pale, pale, silvery) Dark red, bruised, black	Rancid, fetid Unusual smell (smelly, pungent odour, burning, egg smell, pungent, antibiotic smell)	Inelastic, not firm, not tender, more rigid than usual Non-sticky to the touch Non-white fat Flesh with nodes Pasty, bulging to the touch - wet, watery, viscous
Fresh pork	Bright red	Good aroma	Limber Elastic, moderately soft to the touch Sticky to the touch White fat Thick skin Not mushy Dry meat, clean Cooked then bloom

Considering these organoleptic characteristics, most sensory traits are for warm pork, not chilled meat. The number of label names for physical and smell characteristics of unsafe pork reveals 29 labels, while colour indicates 18 labels. The number of organoleptic characteristic names suggests people may pick meat up to examine and smell it to consider its freshness/safety. This finding is consistent with the SafePORK research team's observations at traditional markets. People have a habit of touching meat, holding it up to observe, and smelling it when choosing meat. These actions may contribute to external contamination in meat sold at markets.

Gender and organoleptic characteristics

Men and women did not completely indicate the same organoleptic characteristics. Women revealed more sensory attributes than men. For example, women on average mentioned 2.8 sensory signs, while men on average described 2.1 indicators ($p < 0.05$).

Male suppliers (pig producers, slaughterers, and retailers) expressed sensory traits of unsafe and safe

pork by pinpointing features reflecting the meat's origin. For example, signs of mushy, foul-smelling, burning, or antibiotic smells are aspects of diseased pork; pale flesh points towards dead pigs; and a deep red meat colour reflects a pig often fed many industrial feed pellets. Male pork suppliers mentioned more characteristics than male consumers. Male consumers expressed unsafe meat signs as the red colour being too dark or too light, and the smell being unusual (rancid, smelly, or unpleasant). Little attention was paid to the meat's physical shape. Traits requiring closer observation by touching the meat were mentioned less in male consumers' responses. Their actions differ from the women's answers.

Female consumers listed numerous sensory characteristics of unsafe pork (such as meat being too red, pale or discoloured; smelly or having a strange smell; white discharge; not tender; pasty, inelastic, or not firm). When referring to fresh pork traits, consumer women expressed qualities as bright red meat, fragrant, sticky to the touch, tender, clean and warm. Meanwhile, male consumers only mentioned two signs – the meat being bright red and having good aroma. Female suppliers (pig producers, slaughterers, and retailers) included sensory signs of unsafe meat not mentioned by the above groups: wet, watery, non-sticky meat, and bulging to the touch. These features often appear when meat has been on sale for several hours, especially at the end of the day. When examining women suppliers' answers, the team noticed an absence of comments on traits of pork from diseased or dead pigs, which male suppliers mentioned in a detailed way (in terms of the origin of the meat).

The analysis of the organoleptic characteristics of pork through the opinions of male and female value chain actors prompts researchers to reflect on the possibility that the market may present unsafe meats such as dead pigs, diseased pork and poor-quality pork. Analysing the perception of safe pork and organoleptic characteristics through a gender lens reveals many challenges in addressing the risk of contaminated pork.

Discussion

Biased understandings of pork safety based on an overemphasis of on-farm risks make advocacy efforts to change sanitary practices in pork slaughter and retail difficult (Nga Nguyen-Thi et al. 2015; Hung Nguyen-Viet et al. 2019; Cook M.A., Phuc Pham-Duc, 2019). Safe pork is socially constructed because food safety awareness and compliance rules are a process of social actors interacting and exchanging knowledge and experience. To improve food safety systems, governments need to take active measures to close the knowledge gap between scientific and managerial food safety and the efficient practices of societal food safety.

Conclusion and recommendations

Research shows a gap in the perception of safe pork among women and men pork value chain actors. Male and female actors only pay attention to the inputs of livestock production and the problem of slaughtering healthy pigs with limited knowledge on the other requirements of hygienic practices to avoid contamination.

Besides risk training on pork infection with biological hazards in slaughtering and retailing, providing information and knowledge to ensure food safety in transporting and preserving meat is also recommended. Furthermore, paying attention to the risks of cross-contamination due to consumers' habit of touching meat at markets is necessary. Therefore, vendors should be advised to provide pork handling tools instead of letting customers touch the meat directly with their hands.

References

- Cook M.A. and Phuc Pham-Duc. 2019. Review of biological and chemical health risks associated with pork consumption in Vietnam: Major pathogens and hazards identified in Southeast Asia. *Journal of Food Quality*. <https://doi.org/10.1155/2019/1048092>.
- Grunert, K.G., Loose, S.M., Zhou, Y.F. and Tinggaard, S. 2015. Extrinsic and intrinsic quality cues in Chinese consumers' purchase of pork ribs. *Food Quality & Preference* 42:37–47. <https://doi.org/10.1016/j.foodqual.2015.01.001>.
- Hung Nguyen-Viet, Grace, D., Phuc Pham-Duc, Sinh Dang-Xuan, Toan Luu-Quoc, Unger F., Seth de Vlieger, Ngoc Pham-Thi, Nhiem Duong-Van, Long Nguyen-Hung, Luan Tran-Dinh, and Tran Thi Tuyet-Hanh. 2018. Research and training partnership to assist policy and capacity building in improving food safety in Vietnam. *Global Food Security* 19:24–30. <https://doi.org/10.1016/j.gfs.2018.08.009>.
- Hung Nguyen-Viet, Sinh Dang-Xuan, Phuc Pham-Duc, Kristina Roesel, Huong Nguyen-Mai, Toan Luu-Quoc, Hung Pham-Van, Nga Nguyen-Thi Duong, Lapar, L., Unger, F., Häslar, B. and Grace, D. 2019. Rapid integrated assessment of food safety and nutrition related to pork consumption of regular consumers and mothers with young children in Vietnam. *Global Food Security* 20:37–44. <https://doi.org/10.1016/j.gfs.2018.12.003>.
- Ishra, R., Khanam, R. and Soar, J. 2022. Influence of food safety concerns on safe food purchasing at rural and urban consumers in Bangladesh. *Appetite* 179. <https://doi.org/10.1016/j.appet.2022.106306>.
- Kubberod, E., Ueland, O., Rodbotten, M., Westad, F. and Risvik, E. 2002. Gender specific preferences and attitudes towards meat. *Food Quality and Preference* 13(5): 285-294.
- Nga Nguyen-Thi Duong, Hung Pham-Van, Ha Duong-Nam, Huyen Nguyen-Thi Thu, Thi Ninh-Xuan, Sinh Dang-Xuan, Unger, F., Hung Nguyen-Viet and Grace, D. 2022. Gender-focused analysis and opportunities for upgrading within Vietnam's smallholder pig value chains. *Front. Vet. Sci.* 9:906915. <https://doi:10.3389/fvets.2022.906915>.
- Nga Nguyen-Thi Duong, Lapar, L., Unger, F., Hung Pham-Van, Ha Duong-Nam, Huyen Nguyen-Thi Thu, Long Tran-Van and Be Dang-Thi. 2015. Household pork consumption behavior in Vietnam: Implications for pro-smallholder pig value chain upgrading. Conference on International Research on Food Security, Natural Resource Management and Rural Development. Organized by the Humboldt-Universität zu Berlin and the Leibniz Centre for Agricultural Landscape Research (ZALF), Berlin, Germany September 16-18, 2015.
- Ritzel, C. and Mann, S. 2021. The old man and the meat: On gender differences in meat consumption across stages of human life. *Foods* 10, 2809. <https://doi.org/10.3390/foods10112809>.
- Roesel, K., Ejobi, F., Dione, M., Pezo, D., Ouma, E., Kungu J., Clausen, P.H., Grace, D. 2019. Knowledge, attitudes, and practices of pork consumers in Uganda. *Global Food Security*. 20:26-36. <https://doi.org/10.1016/j.gfs.2018.12.001>.

Authors

Nguyen Thi Minh Phuong and Fred Unger work for ILRI-Vietnam; Pham Van Hung works for Vietnam National University of Agriculture; Pham Duc Phuc works for the Center for Public Health and Ecosystem Research, Hanoi University of Public Health; Le Thi Thanh Huyen works for the Vietnam National Institute of Animal Sciences; and Jenny-Ann Toribio works for the University of Sydney, Australia.

Photo credit

Page 1: CIAT/Georgina Smith

Contact

Phuong Thi Minh Nguyen
ILRI
P.Nguyen@cgiar.org

Acknowledgment

ILRI thanks all donors and organizations which globally support its work through their contributions to the [CGIAR Trust Fund](#).



The International Livestock Research Institute (ILRI) is a non-profit institution helping people in low- and middle-income countries to improve their lives, livelihoods and lands through the animals that remain the backbone of small-scale agriculture and enterprise across the developing world. ILRI belongs to CGIAR, a global research-for-development partnership working for a food-secure future. ILRI's funders, through the CGIAR Trust Fund, and its many partners make ILRI's work possible and its mission a reality. Australian animal scientist and Nobel Laureate Peter Doherty serves as ILRI's patron. You are free to use and share this material under the Creative Commons Attribution 4.0 International Licence ©.

*better lives
through
livestock*

ilri.org