

The research of Meat Preparation and Home Kitchen Practice

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Abstract. The main purpose of this paper is to explore the reasons why some people wash raw meat before cooking. In addition, people's attitudes towards general food handling practices and whether they attach importance to food safety are analyzed from different perspectives. According to a Google form survey, researchers were asked about their food safety and hygiene practices in the kitchen, the type of meat they usually wash, the reasons they wash meat, the amount of time they spend cleaning meat, the methods they use to clean up their workplace afterwards, and their attitudes towards cooking food elsewhere than at home. Through the analysis of Excel software, it was found that the majority (82%) of respondents consider their food safety very important. The report also showed that respondents did not wash most meat, but when they did, fish and poultry were the most commonly washed. The practice of washing raw meat seems to be more popular among the elderly, with the most common reason being that respondents did not respond to wash the meat because they thought it was already clean. Finally, respondents' attitudes toward food safety were not strongly related to whether they washed raw meat or not.

Keywords: hygiene practices, food safety, food handling practice.

1. Introduction

The safety of meat preparation and handling is an urgent food safety challenge in the 21st century, food safety differs from country to country and within cultures. Similar to the principal concept of "three new", this study focuses on a different entry point from traditional research, with a number of perspectives, mainly on the conditions of the cook, the native environment and the cooking habits [1]. This will lead to an in-depth discussion of the underlying reasons why people wash raw meat and poultry and the following results.

The level of importance attached to raw meat food safety tends to be correlated with gender as well. As assessed in the survey [2], for the Ibadan meat market, a mixed-method approach was adopted to collect information on meat safety and related socio-economic factors, and this mixed-collection approach implanted a cross-validation approach in statistics that can serve to adequately ensure the fairness and accuracy of the findings. The importance of washing meat before cooking has a direct effect on reducing mortality from foodborne illnesses and economic losses due to food attribution, which is consistent with the USDA disclosures [3]. Since the mid-1990s, the USDA has mandated the labelling of raw or semi-cooked meat and poultry retail food packages for safe food handling.

The ERS (USDA's Economic Research Service) survey of meat and poultry slaughterhouses in the USA revealed that the constant innovation and development of sound supply chain management equipment has been urging updates in food safety labelling management [4], resulting in over 96% of retail meat having sound food safety tips.

The partnership of food safety education organization was formed in Washington, USA, back in 2009, to begin a partnership aiming to promote the use of meat models by educators to raise food safety awareness [5], and to adopt a cycle timer to observe the scale and frequency of cumulative bacterial growth under different washing conditions and different temperature conditions. The scale and frequency of cumulative bacterial growth under different washing conditions and at different temperatures was observed, thus visualizing the unhealthy hazards of meat products.

At the same time, according to the data, there are three process contaminations in meat throughout the supply chain: during transport (35%), raw meat with native bacteria (34%) and with dusty dirt (31%). However, the fact that 43% of people's chosen method of meat cleaning was direct rinsing with cold water from the tap is consistent with the information collected [6], where nearly a third did not wash surfaces when preparing meat foods and another third were ineffective in not only using ineffective cleaning methods, but also in not using the direct vector of cross-contamination. At the same time, not using special tools to wash raw meat separately also increases the growth of mixed bacteria on ready-to-eat foods and vegetables.

The results of such a study will not only help certain government departments and health boards to promote the implementation of relevant food safety policies but will also help the Ministry of Food Safety Education or Agriculture to adopt a stronger advocacy approach to enhance the speed of change in food hygiene. As the case shows [7], the corresponding legislation and regulations can, in fact, facilitate the legalization of trade and production in the meat industry, creating to a great extent the resilience of food safety in any situation.

Although this research project is ripe for explaining the underlying reasons why people wash raw meat, however, it is deficient if you look at it from a statistical point of view. Most obviously, a complete survey, although containing complete longitudinal questions with 29 independent variables, is set up in a way that confounding variables can easily exist in the middle. For example, the washing habits of different genders with regard to meat, as mentioned in the study [8], would be related to family members and to the physiological mechanisms of the gut of men and women, and in fact would be related in addition to the proportion of men and women doing housework, with full-time housekeepers having different concerns about food safety, and whether or not they are full-time housekeepers would also be related to ethnicity and employment mechanisms of different places of residence. So even given the conditions, failure to consider the potential relationships of confounding variables can lead to bias in the project's findings [9].

According to several studies, people associate washing with cleaning, on a global scale. For example, people wash their clothes, take a bath and wash their cars in order to keep clean. Therefore, in the next stage of study, in order to carry out a comprehensive statistical analysis of the data and obtain more accurate analysis results, the use of grouped control experimental methods, or the use of multiple regression to define the bias correlation coefficient will be the main method when the next in-depth study is carried out.

2. Methodology

According to a Google survey (13,173 questionnaires, including 29 questions) conducted in the fall of 2020 by professors Gabons and Tabatewa of Central Georgia State University [10], by analyzing 13,137 respondents from various cultural, gender, and age groups around the world. The main areas covered in this report are the size of the respondent's household, the importance of food safety, and what they often do when handling raw meat in a food safety framework. Also, which type of meat respondents would wash and rank the reasons they considered important to the Likert grade.

2.1. Research hypothesis

The importance researchers place on their food. Reasons for washing raw meat before cooking and the most commonly washed meats. The age of the person being investigated and their association with cleaning raw meat or poultry; The reasons why the respondent washed meat were related to their importance to food safety.

In order to make the sample data authentic and differentiated, demographic variables such as gender were set in the questionnaire. The data obtained came from a questionnaire survey, which was distributed by food-related content creator Ragusea through his influence on several social media platforms. A global and diverse audience was reached through random sampling. The survey, conducted through Google Forms, managed to collect 13,173 responses [11]. Eighty-four percent of

respondents were male, with 11,066 answers, 12 percent were female, with 1,637 answers, and the rest consisted of those who chose "other." The result of gender frequency analysis shows that: female frequency is 12, accounting for 12.0; Male frequency is 84, accounting for 84.0. Male (84.0%) is the highest and female (12.0%) is the lowest.

2.2. Sampling method

Through a survey consists of 29 problems, related to the theme of the respondents whether clean raw meat, including modal respondents are male, white, born and live in the United States, the age of 34 years old the following, often or sometimes prepare the way for me in the 90% to 99% of people live in the family, 99% of people don't wash meat, and usually pay attention to food safety. From a small sample of surveyed test times, the average attempt time recorded was between 5-9 minutes.

2.3. Basic situation analysis

After removing invalid samples such as duplicate IP, too short response, missing or repeated response from the recovered data, the valid samples are now analyzed, and the third platform is used to make the questionnaire. The questionnaire was conducted anonymously, and the way of asking questions was simple and easy to understand as far as possible. In order to make the final collected questionnaire data more credible, people of different classes were contacted.

3. Results and Discussion

From Table 1, it's clear that most of people wash raw meat or poultry before cooking because they believe that by washing it they clear any bacterial organisms which originally were in the raw meat or poultry. Besides, some meat or poultry may contain traces of blood, many people wash the meat or poultry multiple times to remove the traces of blood. Some of the raw meat or poultry purchased are not fresh, hence people wash it to remove some of the preservatives that were used to extend the product's shelf live. From this study, some people believe that washing raw meat or poultry is not to get rid of the bacteria, but to get rid of the toxins generated from the bacteria. For instance if the toxins excreted by the bacterial are harmful to humans. Hence, this can be the main reasons as to why many people globally wash their raw meat before cooking. It's quite difficult to clear bacteria from the raw meat, but by washing it and cooking it immediately, the bacteria will not have time to create the toxins that are harmful to humans. Hence, the cooked meat or poultry will be free from toxins which had coated it before.

Table 1. Gender and Age variables

Variable		N	(%)
Gender	Female	1,637	12.00%
	Male	11,066	84.00%
	Other	470	4.00%
Age	<20	3,007	22.79%
	20-30	7,058	53.49%
	30-40	2,265	17.17%
	>40	864	6.55%
Total		13,173	100.00%

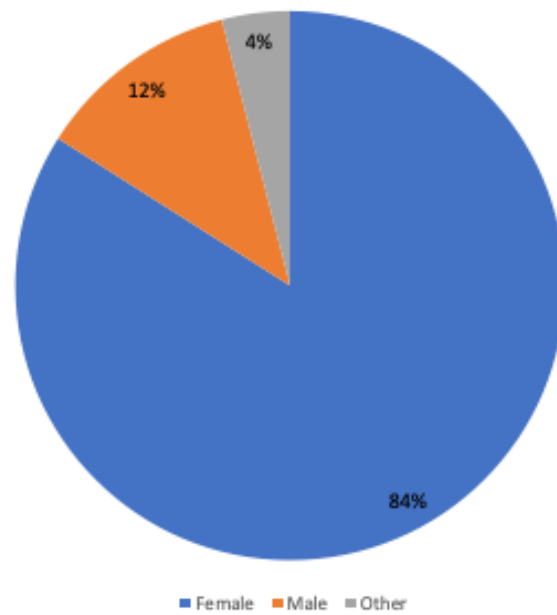


Fig. 1 Gender of Researchers

According to figure 1, this paper notices that 84% of researchers are female in home cooking, while only 12% are male. The practice of washing raw meat seems to be more popular among female, and the food safety should be take into consideration more to these people.

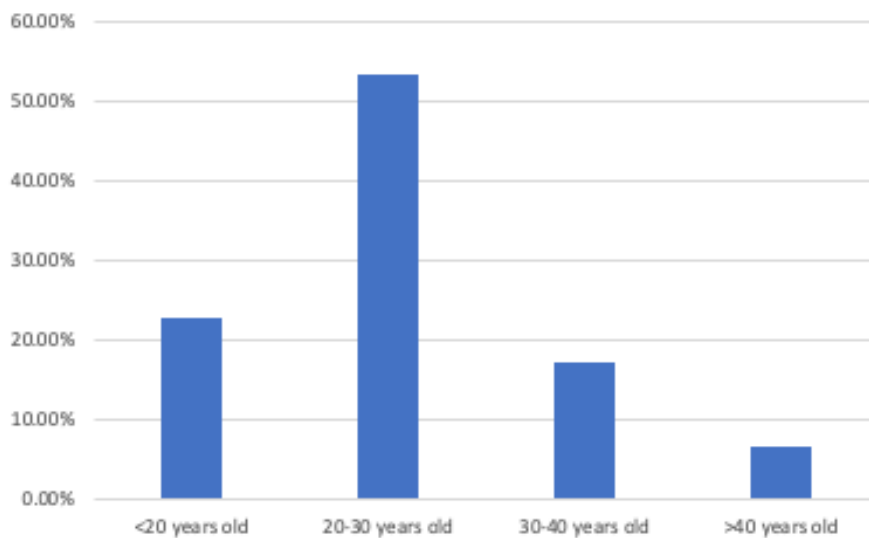


Fig. 2 Age Group of Researchers

As shown in Figure 2, the practice of washing raw meat in home cooking is more common among young and middle-aged adults. The proportion of the population between 30 and 40 years old is 17.17%, the proportion of the population between 20 and 30 years old is 53.49%, and the proportion of the population over 40 years old is 6.55%. These three statistics prove that people aged at least 30 have taken meat safety seriously in their cooking habits over the years. Older people, on the other hand, were slightly less aware of bacterial infections in food.

Table 2. Country of residence of respondents

Country	Responses	Percentage (%)
United States of America	6,355	59.69%
Canada	898	8.41%
UK of Great Britain and Northern Ireland	861	7.98%
Germany	569	5.10%
Australia	418	5.14%
(blank)	333	3.26%
Sweden	318	3.09%
Netherlands	286	2.87%
Poland	259	2.32%
Brazil	231	2.15%
Total	10,528	100.00%

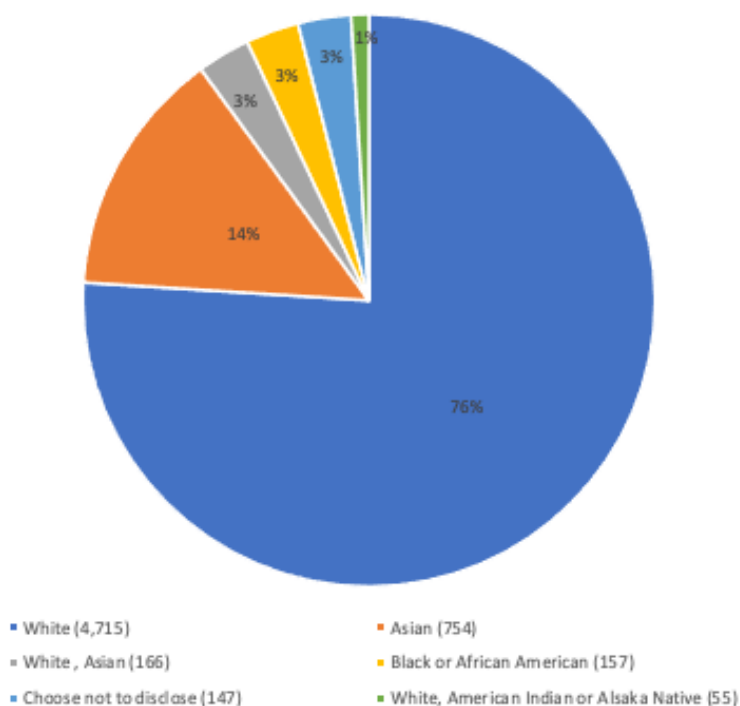


Fig. 3 Respondents' Race

As shown in table 2 and figure 3, it is not coincidentally, the demographics are very similar to those of the above author and publisher, A.Ragusea, as are most of his listeners and, therefore, the respondents to this survey; White men between the ages of 20 and 32 live in the United States.

Table 3. The frequency of Respondents' cooks

How often do you prepare a meal	Respondents	Percentage (%)
Often	9,642	73.28%
Sometimes	3,013	22.42%
Seldom	526	4.19%
Never	13	0.10%
Total	13,194	100.00%

As shown in table 3, About 73 percent of the respondents often prepare their own meals, about 22 percent sometimes cook, only about 4 percent rarely cook, and 13 people (0.10%) never prepare their own meals. These results are predictable, with 37% of people declaring that they cook three to five

times a week, according to an American cooking study. The low frequency of "never" responses is because most people don't look at recipes online when they're barely preparing a meal.

Table 4. Degree of food safety

How important food safety to you? (1-5)	Responses	Percentage (%)
5	4,748	37.28%
4	6,074	45.57%
3	1,984	14.39%
2	346	2.50%
1	39	0.26%
Total	13,191	100.00%

As shown in table 4, most of the respondents attach great importance to food safety. About one third of the respondents (37.28%) attach great importance to food safety (option 5), followed by nearly half of the respondents (45.57%) attach great importance to food safety (option 4). However, 39 people in the Goggle Form survey (less than 1%) don't seem to care about food safety at all (option 1).

Table 5. Wash hands before handling meat

Wash hands before handling meat	Respondents	Percentage (%)
All of the time	3,321	25.17%
Most of the time	6,458	48.95%
Sometimes	2,815	21.34%
Never	600	4.55%
Total	13,191	100.00%

As shown in table 5, the vast majority of respondents (95.46%) wash their hands before handling raw meat, including 'all of the time', 'most of the time' and 'sometimes'; However, 600 of the respondents (4.55%) never wash their hands before cleaning raw meat.



Fig. 4 Food Safety: Others' house Vs Restaurant (1 unimportant, 5 very important)

As shown in figure 4, it compares how important respondents think food safety is at home and in restaurants outside. It is clear that most people are more concerned about food safety in restaurants than in other people's homes. Among them, 9,623 respondents (about 73%) think food safety is much more important in restaurants than in other homes (5 very important), whereas on a scale of 4 (4 important), 42.4% (5,594) think food safety is relatively more important in other people's homes than in restaurants.

Table 6. Reason of washing raw meat

Variable		N	(%)	Cumulative (%)
The reason for washing raw meat	During transportation, meat will contaminate bacteria	3	35.00	35.00%
		5	%	
	Raw meat is easy to breed bacteria	3	34.00	69.00%
How to wash raw meat	Dust and Dirty	4	%	
		3	31.00	100.00%
		1	%	
How to wash raw meat	Water faucet cold water rinse	4	43.00	43.00%
		3	%	
	Drop vinegar in water and so on	2	29.00	72.00%
How to wash raw meat		9	%	
	Soak in the pot	2	28.00	100.00%
		8	%	
Total		1	100.0	100.00%
		00	0%	

The reason frequency analysis showed that the frequency of bacteria contamination in meat during transportation was 35, accounting for 35.0. The frequency of bacteria breeding in raw meat was 34, accounting for 34.0. The frequency of dust and dirt was 31, accounting for 31.0. In the process of transportation, meat would be contaminated with bacteria (35.0%) and dirt (31.0%) was the lowest.

According to the frequency analysis of raw meat washing methods, the frequency of cold water washing was 43, accounting for 43.0. The frequency of dripping vinegar in water was 29, accounting for 29.0; The frequency of soaking in the basin was 28, accounting for 28.0. Faucet cold water washing (43.0%) was the highest, while tub soaking (28.0%) was the lowest.

4. Conclusion

After combining the above complete analysis and argumentation, the research finally verifies the two hypotheses initially set 1. There was a significant correlation between the age of the respondents and their willingness to wash meat, and washing habits were prevalent in middle-aged people aged at least 30 years. 2. The reason for washing meat must be related to the importance of food safety. The two well-tested 0 hypotheses are based on survey data from September to October 2020, which is a random sample to ensure that the original derivation still has acceptable accuracy. Being able to link the seemingly separate 29 questions in the survey with logical relevance will not only dissect realistic conclusions, but also facilitate deeper research into attitudes towards food security at other levels in the future. The results of this study can help to promote the implementation of relevant food safety policies, and also have a strong influence on food safety education.

As can be seen from the above table, the reason why most people choose to clean raw meat is bacteria and microorganisms, and the cleaning method is mostly cold water washing. But the reality is that washing meat, especially with water, can cause cross-contamination in the kitchen, contaminating other foods and increasing food safety risks. Therefore, when washing raw meat, it is best to put the meat in a fixed container, such as a special pot used for meat washing, and then soak in water to clean, which can effectively prevent bacterial cross contamination. However, this is the least choice, indicating that science popularization and publicity should be strengthened. At the same time, even if there are microorganisms, pathogenic bacteria, only high temperature heating can kill, water washing is unable to kill. At this stage of the epidemic, more attention should be paid to personal health, safety and dietary hygiene.

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