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Research Article

Consumer profile of pork in the Curu Valley, Brazil: Consumption habits and perceptions

Perfil dos consumidores de carne suína comercializada no Vale do Curu, Brasil

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ABSTRACT

This study aimed to characterize the profile and consumption habits of pork consumers in the Curu Valley region of Ceará, Brazil. A total of 87 electronic questionnaires were administered between February and July 2025, collecting data on age, income, consumption frequency, purchasing location, and perceptions regarding pork. The results indicate that most consumers were between 18 and 20 years old, had completed secondary education, and reported monthly household incomes ranging from one to three minimum wages. Pork was consumed weekly by 52.3% of respondents, predominantly at lunch (95.3%), with specialized meat shops representing the main point of purchase (61.6%). The most preferred cuts were pork ribs (66.3%) and pork loin chops (64%), generally prepared roasted (48.8%). Quality and freshness were the most important criteria at the time of purchase (58.1%), and more than half of respondents (54.7%) reported inquiring about the meat's origin. Although pork was positively perceived in terms of flavor and nutritional value—particularly its high-quality protein and essential mineral content—cultural misconceptions persisted, especially regarding fat content and disease transmission. A considerable proportion of respondents also reported washing pork, highlighting gaps in their food safety knowledge. Addressing these issues requires targeted educational campaigns in schools, health facilities, and community spaces, with an emphasis on dispelling misconceptions and disseminating scientifically grounded practices for the safe handling and preparation of pork.

KEYWORDS: Consumer profile. Eating habits. Pork. Consumption behavior. Food safety.

RESUMO

Este estudo teve como objetivo caracterizar o perfil e os hábitos de consumo de carne suína na região do Vale do Curu, Ceará. Foram aplicados 87 questionários eletrônicos entre fevereiro e julho de 2025, contemplando informações sobre idade, renda, frequência de consumo, local de aquisição e percepções em relação à carne suína. Os resultados indicaram que a maioria dos consumidores tinha entre 18 e 20 anos, ensino médio completo e renda domiciliar entre um e três salários-mínimos. A carne suína foi consumida semanalmente por 52,3% dos entrevistados, predominantemente no almoço (95,3%), sendo os frigoríficos o principal ponto de compra (61,6%). Os cortes mais preferidos foram a costelinha (66,3%) e a bisteca (64%), geralmente preparados de forma assada (48,8%). Qualidade e frescor constituíram os critérios mais relevantes no momento da aquisição (58,1%), e mais da metade dos participantes (54,7%) relatou buscar informações sobre a origem da carne. Apesar da percepção positiva quanto ao sabor e ao valor nutricional, especialmente pelo aporte de proteínas de alta qualidade e minerais essenciais, persistem concepções equivocadas, sobretudo em relação ao teor de gordura e à transmissão de doenças. Além disso, parcela considerável dos entrevistados relatou o hábito de lavar a carne suína, evidenciando lacunas no conhecimento sobre segurança alimentar. Enfrentar tais desafios requer a implementação de campanhas educativas direcionadas a escolas, unidades de saúde e espaços comunitários, com ênfase na desconstrução de concepções equivocadas e na divulgação de práticas cientificamente embasadas para o manuseio e preparo seguro da carne suína.

PALAVRAS-CHAVE: Perfil do consumidor. Hábitos alimentares. Carne suína. Comportamento de consumo. Segurança dos alimentos.

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INTRODUCTION

Globally, pork is the most consumed source of animal protein, excluding milk, accounting for 36% of total intake, followed by poultry (33%), beef (24%), and goat/sheep meat (5%). China remains the world's leading producer, responsible for 48.4% of global output (115.5 Mt), although production declined from 56.9 Mt in 2023 to 55.9 Mt in 2024. With more than 50% of global consumption (58.1 Mt), China also leads pork demand, followed by the European Union (15.7%), the United States (8.7%), Russia, and Vietnam (both around 3.8 Mt) (USDA 2024).

In Brazil, per capita pork consumption reached a record 19.52 kg in 2024, despite a slight decline from 2023, according to the Brazilian Institute of Geography and Statistics (IBGE – Instituto Brasileiro de Geografia e Estatística). Over the past decade, consumption rose by nearly 35% (+5.05 kg/capita/year) compared to 2015 (14.47 kg/capita/year). Pork has thus become the fastest-growing animal protein in the Brazilian diet, driven by greater affordability, substitution of beef due to rising prices, and its increasing incorporation into daily meals and barbecues. Brazil currently ranks fourth worldwide in pork production and third among the largest pork exporters, demonstrating the strategic importance of the swine production chain in the national agribusiness sector, according to the Brazilian Agricultural Research Corporation (EMBRAPA 2025).

At the regional level, the Northeast recorded above-average growth, with a 2.9% increase in slaughter numbers, totaling 4.4 million animals. Ceará registered an 18.2% increase in its herd, consolidating its position as the second-largest herd in the region (27.7%), behind Bahia (46.9%) (IBGE 2024). In the Curu Valley, pig farming still predominates on a smallholder basis, yet trends point to expansion, greater integration into local markets, and strengthening of inspected slaughter. However, structural barriers remain, including limited investments in management technology, animal nutrition, and biosecurity, as well as insufficient slaughterhouse capacity under official inspection. These factors are crucial to meet the sanitary and quality requirements of domestic and regional markets. The Curu Valley, located in the northwest of Ceará, comprises the municipalities of Apuiarés, General Sampaio, Irauçuba, Itapajé, Pentecostes, São Luís do Curu, Tejuçuoca, and Umirim (CEARÁ 2019).

Understanding consumer behavior is critical to promoting pork consumption. Consumer decisions are shaped by social, cultural, psychological, and economic factors, encompassing stages from need recognition to post-purchase evaluation (KOTLER & KELLER 2016). Recent studies emphasize the importance of analyzing consumer behavior to better align production and marketing strategies with market demand, particularly in the meat sector (FONT-I-FURNOLS & GUERRERO 2014, TROY & KERRY 2019). However, there is a lack of empirical evidence on pork consumption in the Curu Valley region. Therefore, this study aims to identify the profile and habits of pork consumers in this area, providing insights to strengthen the local meat production chain and improve product quality standards.

MATERIAL AND METHODS

The study was conducted in the Curu Valley, Ceará, with a population of 385,519 inhabitants (CEARÁ 2022). Participants completed an electronic questionnaire

distributed via social media platforms such as Instagram, WhatsApp, email, and Facebook. Eligible respondents were residents of one of the municipalities in the Curu Valley. The project was approved by the Research Ethics Committee of the Federal Institute of Education, Science, and Technology of Ceará (IFCE), under approval number 7.276.837. Prior to completing the online questionnaire, participants indicated their agreement with the Free and Informed Consent Form.

A semi-structured questionnaire was applied between February and July 2025, containing 19 questions covering gender, age group, education, household income, consumption frequency, meals, reasons for non-consumption, purchase locations, product selection criteria, perceptions of flavor and health benefits, preferred cuts, preparation methods, knowledge of foodborne diseases, and whether they believed pork could transmit such diseases. Respondents were men and women aged 18 or older.

Data were tabulated in Microsoft Excel® and expressed as percentages. To assess potential associations between sociodemographic variables and consumption habits, chi-square tests of independence were applied, considering a significance level of 5% ($p < 0.05$). Specifically, cross-tabulations were performed for age group × consumption frequency and income × consumption frequency.

RESULTS

A total of 87 interviews were conducted. Among the consumers interviewed, 50.6% were male and 49.4% were female. It was observed that most respondents were between 18 and 20 years old (50%), had completed high school (58.1%), and reported a monthly household income ranging from one to three national minimum wages (94.1%) (Table 1).

Table 1. Demographic and socioeconomic characteristics (gender, age group, education level, and monthly income) of pork consumers in the Curu Valley, Ceará, Brazil, from February to July 2025.

Variable	Answer	Percentage (%)
Gender	Male	50.6
	Female	49.4
Age group (Years old)	18-20	50.0
	21-40	45.3
	41-60	4.7
	Over 60	0.0
Education level	Incomplete fundamental	1.2
	Complete fundamental	3.5
	Incomplete high school	14.0
	Complete high school	58.1
	Incomplete higher education	14.0
	Complete higher education	4.7
	Complete postgraduate studies	4.7
	Incomplete postgraduate studies	0.0
Monthly income (national minimum wages)	1-3	94.1
	3-6	4.7
	6-10	1.2
	Above 10	0.0
TOTAL	**-**	**100.0**

Questionnaires are recognized as valid research instruments and are widely used for data collection across various fields of knowledge. Their application enables systematic investigation of the opinions of a representative sample of the population, as well as providing complementary information on socially relevant issues (BRYMAN 2016, GIL 2019).

The consumption of pork in daily meals is relevant as it provides high-quality proteins, B-complex vitamins (B1, B6, and B12), and essential minerals such as iron, zinc, and selenium. These nutrients play a fundamental role in strengthening the immune system, preventing anemia, maintaining muscle health, and ensuring proper nervous system function, making pork a nutritious and balanced option for the everyday diet (FONT-I-FURNOLS & GUERRERO 2014, RESENDE & CAMPOS 2015). Regarding consumption frequency, a large proportion of respondents (52.3%) reported consuming pork weekly (Table 2).

Specialized meat shops were identified as the primary establishments for pork acquisition (61.6%), as seen in Table 2. However, consumers consider several aspects when purchasing the product, particularly commercialization conditions such as display temperature, meat color, the presence of flies, and accumulated waste, which accounted for 62.1% of the factors considered. Additional elements, including price, color, cut, fat content, and packaging appearance, are also crucial for quality assessment. Among sensory attributes, color is one of the most influential factors in purchase decisions. The appearance of fresh meat, particularly its color, plays a key role in attracting consumers and shaping their perception of quality at the time of purchase (FONT-I-FURNOLS & GUERRERO 2014, TROY & KERRY 2019).

Table 2. Consumer preferences regarding pork in the Curu Valley, Ceará, Brazil, from February to July 2025.

Variable	Answer	Percentage (%)
Considers pork tasty	Yes	92.0
	No	8.0
Consumption frequency	Weekly	52.3
	Monthly	22.1
	Biweekly	20.9
	Daily	4.7
Consumption meals (Multiple choice question)	Lunch	95.3
	Dinner	40.7
	Breakfast	2.3
Acquisition establishment	Specialized meat shops	61.6
	Supermarkets	29.1
	Grocery stores	3.5
	Street markets	5.8
Factor considered at the place of purchase	Product marketing conditions	62.1
	Sanitation of the premises	32.6
	I don't pay attention to the characteristics of the environment	2.3
TOTAL	**-**	**100.0**

Fresh meat should be kept at room temperature only for the minimum time necessary during handling and preparation, as prolonged exposure may increase microbiological risks. Therefore, foods that have been left at room temperature for extended periods should be avoided. Freezing meat products at –18 °C for seven days

effectively eliminates most tissue cysts responsible for toxoplasmosis. Temperature control in the meat industry is essential to prevent the proliferation of microorganisms responsible for spoilage. Under ideal conditions, meat no longer poses risks to consumers while preserving its flavor and tenderness (LEYGONIE et al. 2012, AUNG & CHANG 2014). Regarding storage practices, consumers preferred refrigeration (62.8%), as illustrated in Figure 1.

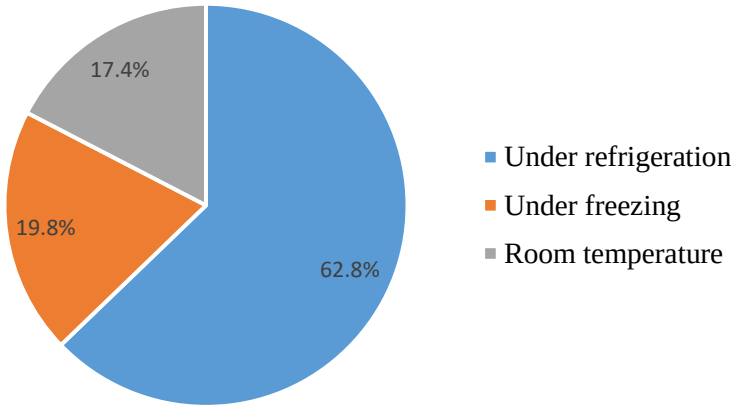


Figure 1. Forms of pork marketing, according to consumers interviewed in the Curu Valley, Ceará, Brazil, from February to July 2025.

More than half of the respondents (54.7%) reported seeking information on the origin of the pork they purchase. Conversely, Figure 2 shows that most participants reported the habit of washing pork before preparation. This practice is often adopted because it was learned from family members or motivated by perceived undesirable sensory characteristics, such as odor. However, washing meat prior to consumption is not recommended. The rationale for washing stems from the perception that meat, owing to its nutrient-rich composition and multiple potential sources of contamination from slaughter to consumption, may harbor various microorganisms (viruses, bacteria, protozoa, and fungi).

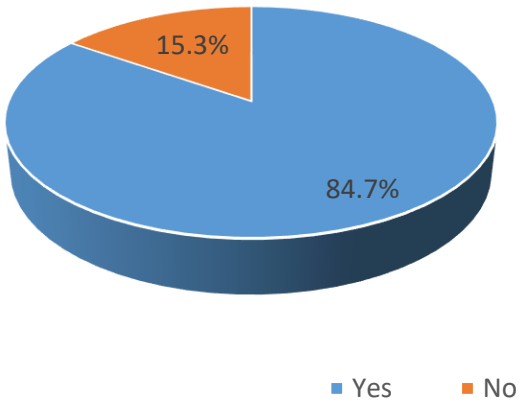


Figure 2. Consumer practice of washing pork before preparation, as reported by respondents residing in the Curu Valley, Ceará, Brazil, from February to July 2025.

Nevertheless, meat is safe for consumption when produced in hygienic, inspected, regulated, and certified facilities, properly transported and stored under adequate temperature conditions, and prepared in accordance with packaging instructions and shelf-life recommendations (FAO/WHO 2020).

Since meat surfaces naturally harbor microorganisms, special attention must be paid to prevent their spread to other foods, kitchen surfaces, and utensils, which may result in cross-contamination. Such dispersion occurs mainly through hand and utensil handling. Washing meat under running water can further amplify the dissemination of biological agents, increasing contamination throughout the kitchen environment, including sinks, utensils, sponges, cloths, dishes, and other foods. Cross-contamination and microbial proliferation may lead to the ingestion of contaminated food and, consequently, the development of foodborne diseases (PARK et al. 2020, IULIETTO & EVERS 2024).

When purchasing pork, consumers reported that freshness and quality are the most important criteria (58.1%). Regarding preferred cuts, spareribs were the most popular (66.3%), followed by loin chops (64%). As for preparation methods, roasting was the most common choice (48.8%). Among respondents, 88% believed pork to be beneficial; however, 89.5% also expressed concerns about potential health risks, citing high fat content and disease transmission as the main reasons (Table 3).

Table 3. Criteria considered by consumers when purchasing pork in the Curu Valley, Ceará, from February to July 2025.

Variable	Answer	Percentage (%)
Evaluation criteria	Quality and freshness	58.1
	Confidence in point of sale	20.9
	Best price	18.6
	Proximity to residence	2.3
Preferred pork cuts	Pork ribs	66.3
	Pork loin chops	64.0
	Ham	37.2
	Tenderloin	20.9
	Pork belly (pancetta)	16.3
	Intestines	1.2
	Rump cap	1.2
Preparation methods	Roasted	48.8
	Fried	31.4
	Cooked	17.4
	Other methods	2.3
Perceived benefits	Yes	88.0
	No	12.0
Harmful effects	Yes	89.5
	No	10.5
Foodborne illnesses	Yes	95.9
	No	4.1
Diseases transmitted by meat pork	Yes	97.3
	No	2.7
TOTAL	**-**	**100.0**

In addition to descriptive analysis, chi-square tests of independence were applied to evaluate potential associations between socioeconomic variables and pork consumption habits. The relationship between age group and consumption frequency was not statistically significant ($\chi^2 = 0.27$; df = 6; $p = 0.999$), indicating that pork

consumption patterns are similar across the different age groups evaluated. Likewise, the association between income range and consumption frequency was not significant ($\chi^2 = 1.15$; df = 6; $p = 0.979$), suggesting that family income does not significantly influence consumption frequency in the studied population. Overall, pork consumption in the Curu Valley appears to be primarily influenced by cultural and familial factors rather than by economic status or age.

Brazilian consumers generally well accept pork due to its flavor. Nevertheless, many participants reported abstaining from consumption because of the perception that pork is “harmful and dangerous to health,” mainly due to beliefs regarding “excess fat and cholesterol.” These findings underscore the lack of information among the population. When consumers associate pork with health risks, they often refer to parasitic diseases traditionally associated with pork, such as taeniasis and cysticercosis (ANJOS et al. 2018).

CONCLUSION

The results demonstrated that although pork is generally well accepted for its flavor and nutritional benefits, a significant portion of consumers still associate its consumption with potential health risks, particularly the fear of contracting diseases. This reflects a gap in food safety knowledge and the persistence of cultural misconceptions surrounding pork.

Addressing these challenges requires implementing targeted educational campaigns in schools, health units, and community spaces, with an emphasis on dispelling misconceptions and disseminating scientifically grounded practices for the safe handling and preparation of pork.

Such initiatives would not only promote healthier, more conscious consumption but also strengthen consumer trust, contributing to the sustainable development of the regional pork production chain and enhancing its market competitiveness.

NOTES

AUTHOR CONTRIBUTIONS

Conceptualization, methodology, and formal analysis: Yasmim Barros Araújo and Francisco Carlos de Sousa. Investigation and data curation: Yasmim Barros Araújo. Writing—original draft preparation: Yasmim Barros Araújo. Writing—review and editing: Francisco Carlos de Sousa. Supervision and project administration: Francisco Carlos de Sousa. All authors have read and agreed to the published version of the manuscript.

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INSTITUTIONAL REVIEW BOARD STATEMENT

The study involved human participants through the application of a questionnaire and was approved by the Research Ethics Committee of the Federal Institute of Education, Science and Technology of Ceará (IFCE), under protocol n°. 7.276.837.

INFORMED CONSENT STATEMENT

All participants signed the Free and Informed Consent Form prior to completing the questionnaire.

DATA AVAILABILITY STATEMENT

The data can be made available under request.

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CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this manuscript.

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