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Consumers attitude towards pork quality and consumption pattern in two North East states of Assam and Manipur

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Abstract

Investigation was done to assess and compare consumer attitudes towards pork quality and consumption in two North Eastern states of India—Assam and Manipur—where pork constitutes a major share of meat consumption. A total of 120 respondents were selected purposively from two districts, Kamrup (M) in Assam and Chandel in Manipur, with 30 consumers chosen from each of the two randomly selected villages per district. Data were collected from June to August 2024 using a structured interview schedule and a 24-item attitude scale. Each item was rated on a five-point Likert scale, and scoring was adjusted for negative statements. The minimum and maximum obtainable scores were 24 and 120, respectively. The results revealed that consumers from Manipur exhibited significantly more positive attitudes toward pork quality and consumption than those from Assam. Mean attitude scores were 3.84 in Assam and 4.21 in Manipur, with respective standard deviations of 0.87 and 0.75. Cronbach's alpha values were used to confirm the reliability of the attitude scale and it was found to be 0.90 for Assam, 0.83 for Manipur and 0.90 for the pooled sample. Key concerns among Assam consumers included the use of additives and ethical pig rearing. In contrast, Manipur consumers were ready to pay more for organically raised pork and placed greater emphasis on food safety and health impacts. The overall mean scores were 92.28 in Assam and 101.16 in Manipur, with the difference being highly significant ($z = -3.88$, $P < 0.01$). The findings highlighted regional differences in consumer perceptions, with food safety, production practices and health consciousness playing pivotal roles. The study concludes that understanding consumer preferences and regional expectations is essential for guiding pork production, processing and marketing strategies in the Northeastern region.

Keywords: Consumer attitude, pork consumption, pork quality, food safety, consumer preference

Introduction

In India, consumer perspectives regarding the quality of pork are being increasingly considered as the food landscape continues to undergo significant changes. Economic growth and urbanization influence consumer preferences, encouraging a growing awareness of the standards and quality associated with food choices.

Pork quality is an important factor that closely influences consumer attitudes. Elements such as taste, tenderness, juiciness and overall safety contribute to how consumers perceive pork quality. In light of recent food safety incidents and health concerns that have garnered public attention, there is a notable shift among consumers toward seeking greater transparency regarding the sources and processing of pork products.

The dynamics of meat consumption are further driven by important demographic changes (Allievi *et al.*, 2015) ^[1],

including increased nutritional demands for high-protein foods (Hawkesworth *et al.*, 2010) ^[9] and evolving consumer preferences. Various determinants such as price, income levels, nutritional value, flavor, dietary habits, safety and convenience of purchase—are all influential in shaping meat consumption patterns (Wu and Xiao, 2013; Liang *et al.*, 2014 ^[24, 14] and Zhang *et al.*, 2014) ^[25]. Factors including price, income, religious beliefs, flavor preferences, nutritional content, safety and overall eating quality play essential roles in guiding these consumer expectations (Mao *et al.*, 2016) ^[15].

Pork is the predominant meat consumed in the North Eastern states of India, representing 77.80 percent of the total meat consumption (Kadrivel *et al.*, 2018). The quality of the pig is paramount, as pork is held to elevated standards of taste, texture and freshness, reflecting the region's commitment to locally sourced and minimally processed

foods.

Pork quality is a vital component of Assamese cuisine, reflecting the region's strong emphasis on fresh and locally sourced ingredients. A study by Borah *et al.* (2018) ^[4] indicates that 95.00 per cent of respondents prioritize freshness and quality when purchasing pork. Other important criteria include visual examination (65.00 per cent), previous taste experiences (65.00 per cent), attractive displays of products (50.00 per cent) and quality assurances provided by retailers (21.00 per cent).

Manipur, situated in the Northeastern region of India, exemplifies a rich tapestry of cultural diversity and traditions. Consumers assess a variety of visual attributes when making decisions about pork and pork-based products. The appearance of the meat plays a crucial role in purchasing decisions with factors such as freshness, fat-to-lean ratio, colour, marbling and tenderness serving as critical indicators of quality.

Materials and Methods

Investigation was done in two states of North East India i.e., Assam and Manipur which were purposively selected. From each state 60 consumers were selected as respondents for the study making a total sample size of 120. The study was conducted in two districts namely Kamrup (M) in Assam and Chandel in Manipur. From Kamrup (M) district two villages namely Tetelia and Tepesia and from Chandel district, two villages namely Kanankhu and Panchai village were randomly selected. From each village 30 respondents were selected for the study that is 60 respondents from each district making a total of 120. This equal distribution ensured that the sample was balanced across the selected villages, allowing for comparative analysis. The study focused on individuals above 18 years old who had shopping responsibility and also consumer of pork. To thoroughly capture the complexity of attitudes, we created a rigorous structured interview schedule designed to assess attitudes toward pork quality and consumption.

The researcher personally visited the residences of each respondent between June 2024 to August 2024. The attitude scale towards pork quality and consumption consisted of 24 carefully crafted items.

Participants will indicate their level of agreement with each statement on the attitude scale, reflecting their thoughts and judgments about pork quality and consumption.

The scoring system is clear and effective: the minimum and maximum obtainable scores were 24 and 120 for the pork quality and consumption. This method ensures a thorough and accurate assessment of participants' attitudes, providing valuable insights into their perspectives on pork quality and consumption.

Strongly agree	-5
Agree	-4
Undecided	-3
Disagree	-2
Strongly disagree	-1

For negative statement score were just reverse

Results and Discussion

The findings highlight notable differences in consumer

attitudes toward pork quality and consumption between Assam and Manipur. The results indicate a strong concern for food safety, production practices and quality attributes, coupled with moderate attention to sustainability, animal welfare and broader ethical considerations.

The findings in Table 1 revealed that the consumers in Assam showed highest scores for concerns about the "use of additives such as hormones and antibiotics in pork production" (4.20), followed closely by the belief that the "ethical and the way pigs are raised affects the taste and quality of pork" (4.16) and concerns about "cautious about the use of medications on pigs shortly before they are sold" (4.08). These findings suggest that consumers in Assam prioritize food safety, ethical animal husbandry and the perceived impact of production practices on pork quality. However, the lowest scores were associated with preferences for "purchasing with a higher fat content" and "buying pork from suppliers who uphold high standards of animal welfare" (3.56), and "I enjoy cooking and experimenting with new pork recipes" (3.51). This indicates relatively low enthusiasm for fatty pork, concerns about animal welfare and culinary experimentation in this region.

In Manipur, scores were consistently higher than those in Assam, reflecting a stronger concern or preference across all evaluated items. The highest scores were observed for concerns about "I am ready to pay more for organic raised pigs" (4.51), "cautious about the use of medications on pigs shortly before they are sold" (4.46), and "I strive to make healthy dietary choices by considering the impact of pork on my overall well-being" (4.41). These scores indicate that Manipur consumers are particularly conscious of food safety, organic options, and the health implications of pork consumption. Conversely, the lowest scores in Manipur were for "exploring alternative protein sources" (3.95) and "prioritize purchasing with a higher fat content" (3.06). These findings suggest relatively lower importance placed on fattier cuts and alternative proteins considerations.

The pooled results on the importance of pork quality attributes such as food safety, the influence of pig rearing practices on pork quality and consistent tenderness and flavor. These priorities reflect consumer focus on safety, ethical production practices and product consistency. However, there is relatively less emphasis on preferences for fattier pork, purchasing from sources that prioritize pig welfare and supporting sustainable pork farming practices. This suggests these factors are less influential in shaping overall consumer attitudes compared to other aspects of pork quality and consumption.

Similar findings were reported by Chen *et al.* (2010), Resano *et al.* (2011) ^[21], Kiran *et al.* (2011) ^[12], Li, (2012) ^[13], Melfou (2012) ^[16], Paul and Rana (2012) ^[19], Wu and Xiao, (2013) ^[24], Tarczynska (2014), Zhang *et al.* (2014) ^[25], Liang *et al.* (2014) ^[14], Mao *et al.* (2016) ^[15], Kiran *et al.* (2017) ^[11], Miranda *et al.* (2017) ^[17], Borah *et al.* (2018) ^[4], Grunert *et al.* (2018) ^[8], Fraqueza, Borges and Patarata (2018) ^[6], Bir *et al.* (2019) ^[3], Nguyen *et al.* (2019) ^[18], Pophiwa, Webb and Frilynck (2020) ^[20] and Gonera *et al.* (2021) ^[7]. However, the finding was contradicted with the findings of Verbeke *et al.* (2010) ^[23] and Font *et al.* (2012) ^[5].

Cronbach's alpha coefficients, mean and standard deviations of attitude towards the pork quality and consumption

The results in Table 2 revealed that Cronbach alpha coefficients for reliability analysis for attitude towards pork quality and consumption were calculated as 0.90 in Assam, 0.83 in Manipur and 0.90 in pooled sample. The mean for pork quality and consumption were 3.84 in Assam, 4.21 in Manipur and 4.03 in pooled sample with their respective standard deviation as 0.87, 0.75 and 0.83 respectively.

The results showed that Assam consumers' hold generally positive attitudes towards pork quality and consumption, though slightly less favorable compared to Manipur. Greater variability in consumer responses, indicating a more diverse range of perceptions. This variability may stem from differences in access to high-quality pork, cultural diversity within Assam, and variations in consumer expectations across rural and urban settings.

Comparing the two states attitudes towards pork quality and consumption

The results in Table 3 revealed that concerning pork quality

and consumption, the average score of the consumer were 92.28 and 101.16 with their respective standard deviation as 11.70 and 7.65 and range as 68.00-116.00 and 88.00-117.00 respectively in Assam and Manipur. After comparison of the mean scores of consumers of the two states, it was found that the mean score of Manipur was highly significant than that of Assam ($z = -3.88^{**}$, $P = 0.00$).

The result showed that the attitudes of Manipur consumers towards pork quality were significantly more positive than those of Assam. The present study presented evidence of consumer differences between the states of Assam and Manipur in attitudes toward pork quality. Consumers' attitudes toward the quality of pork are based on fundamental preferences and cultural expectations. Both Assam and Manipur perceive certain quality parameters differently, yet common social and cultural their values have grown apart in unique ways over time. Such values could not be held common among consumers of both states because of their beliefs in the importance of factors such as texture, taste and methods of production that define the quality of pork.

Table 1: Descriptive Statistics Regarding Consumer Attitude Towards Pork Quality And Consumption

Sl.no.	Statement	State	Degree of Agreement						SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree	$\bar{X}$	
1	I place significant importance on the selection of pork that consistently demonstrates tenderness and flavor	Assam	0.00	1.66	23.33	50.00	25.00	3.98	0.74
		Manipur	0.00	0.00	15.00	68.33	16.66	4.01	0.56
		Pooled	0.00	0.83	19.16	59.16	20.83	4.00	0.71
2	The visual attributes of pork, including its color and marbling, are crucial factors influencing my purchasing decisions	Assam	0.00	5.00	26.66	41.66	26.66	3.90	0.85
		Manipur	0.00	0.00	6.66	51.66	41.66	4.35	0.60
		Pooled	0.00	2.50	16.66	46.66	34.16	4.12	0.82
3	I have concerns regarding the use of additives such as hormones and antibiotics within pork production	Assam	0.00	0.00	15.00	50.00	35.00	4.20	0.68
		Manipur	1.66	0.00	10.00	36.66	51.66	4.36	0.80
		Pooled	0.83	0.00	12.50	43.33	43.33	4.28	0.80
4	I value sourcing pork from animals that have reached full maturity	Assam	0.00	6.66	21.66	43.33	28.33	3.93	0.88
		Manipur	0.00	1.66	30.00	33.33	35.00	4.01	0.85
		Pooled	0.00	4.16	25.83	38.33	31.66	3.97	0.90
5	I prioritize purchasing with a higher fat content for flavor and texture.	Assam	3.33	11.66	26.66	41.66	16.66	3.56	1.01
		Manipur	5.00	40.00	21.66	10.00	23.33	3.06	1.28
		Pooled	4.16	25.83	24.16	25.83	20.00	3.31	1.19
6	I am cautious about the use of medications on pigs shortly before they are sold.	Assam	0.00	0.00	25.00	41.66	33.33	4.08	0.76
		Manipur	0.00	0.00	10.00	33.33	56.66	4.46	0.67
		Pooled	0.00	0.00	17.50	37.50	45.00	4.27	0.79
7	I prioritize buying pork from suppliers who uphold high standards of pig welfare.	Assam	3.33	11.66	28.33	38.33	18.33	3.56	1.03
		Manipur	0.00	0.00	1.66	55.00	43.33	4.41	0.53
		Pooled	1.66	5.83	15.00	46.66	30.83	3.99	0.95
8	Pork pricing plays a crucial role in shaping my purchase decisions.	Assam	1.66	1.66	20.00	50.00	26.66	3.98	0.83
		Manipur	0.00	0.00	6.66	48.33	45.00	4.38	0.61
		Pooled	0.83	0.83	13.33	49.16	35.83	4.18	0.80
9	I am ready to pay mor for organic raised pigs.	Assam	1.66	3.33	23.33	50.00	21.66	3.86	0.85
		Manipur	0.00	0.00	1.66	45.00	53.33	4.51	0.53
		Pooled	0.83	1.66	12.50	47.50	37.50	4.19	0.83
10	I assess the nutritional profile, such as protein and fat, before selecting pork products.	Assam	0.00	6.66	21.66	41.66	30.00	3.95	0.89
		Manipur	0.00	0.00	33.33	43.33	23.33	3.90	0.75
		Pooled	0.00	3.33	27.50	42.50	26.66	3.92	0.86
11	I enjoy trying out various cuts and exploring different types of pork	Assam	1.66	8.33	25.00	38.33	26.66	3.80	0.98
		Manipur	0.00	0.00	1.66	50.00	48.33	4.46	0.53
		Pooled	0.83	4.16	13.33	44.16	37.50	4.13	0.90
12	I place greater trust in certain brands or labels when choosing pork	Assam	1.66	10.00	20.00	40.00	28.33	3.83	1.01
		Manipur	0.00	0.00	28.33	50.00	21.66	3.93	0.70
		Pooled	0.83	5.00	24.16	45.00	25.00	3.88	0.90
13	Cultural or religious beliefs influence my	Assam	1.66	1.66	31.66	40.00	25.00	3.85	0.87

	consumption of pork	Manipur	0.00	0.00	1.66	55.00	43.33	4.41	0.53
		Pooled	0.83	0.83	16.66	47.50	34.16	4.13	0.82
14	I am mindful of safety concerns related to pork consumption	Assam	0.00	5.00	20.00	46.66	28.33	3.98	0.83
		Manipur	0.00	0.00	1.66	61.66	36.66	4.35	0.51
		Pooled	0.00	2.50	10.83	54.16	32.50	4.16	0.76
15	I believe that ethical and the way pigs are raised affects the taste and quality of pork.	Assam	0.00	6.66	16.66	30.00	46.66	4.16	0.94
		Manipur	0.00	0.00	1.66	60.00	38.33	4.36	0.51
		Pooled	0.00	3.33	9.16	45.00	42.50	4.26	0.81
16	I enjoy cooking and experimenting with new pork recipes	Assam	0.00	5.00	48.33	36.66	10.00	3.51	0.74
		Manipur	0.00	6.66	15.00	51.66	26.66	3.98	0.83
		Pooled	0.00	5.83	31.66	44.16	18.33	3.75	0.85
17	I am open to reducing pork intake and exploring alternative protein sources for better health or environmental benefits	Assam	0.00	6.66	38.33	41.66	13.33	3.61	0.80
		Manipur	3.33	1.66	18.33	50.00	26.66	3.95	0.90
		Pooled	1.66	4.16	28.33	45.83	20.00	.78	0.90
18	Recommendations from friends, family, or online platforms influenced my purchasing decision	Assam	0.00	6.66	26.66	46.66	20.00	3.80	0.83
		Manipur	0.00	0.00	8.33	55.00	36.66	4.28	0.61
		Pooled	0.00	3.33	17.50	50.83	28.33	4.04	0.81
19	Supporting sustainable pork farming practices gives me a sense of purpose and fulfillment.	Assam	0.00	8.33	45.00	40.00	6.66	3.45	0.74
		Manipur	0.00	0.00	10.00	40.00	50.00	4.40	0.66
		Pooled	0.00	4.16	27.50	40.00	28.33	3.92	0.88
20	The health benefits of lean pork cuts strongly influence my buying choices.	Assam	0.00	1.66	26.66	55.00	16.66	3.86	0.70
		Manipur	0.00	0.00	6.66	61.66	31.66	4.25	0.57
		Pooled	0.00	0.83	16.66	58.33	24.16	4.05	0.71
21	I prefer pork products that do not contain artificial preservatives or additives.	Assam	0.00	1.66	23.33	60.00	15.00	3.88	0.66
		Manipur	0.00	0.00	3.33	65.00	31.66	4.28	0.52
		Pooled	0.00	0.83	13.33	62.50	23.33	4.08	0.68
22	I compare pork's affordability to other meats when deciding what to buy	Assam	0.00	5.00	31.66	43.33	20.00	3.78	0.82
		Manipur	0.00	0.00	21.66	43.33	35.00	4.13	0.74
		Pooled	0.00	2.50	26.66	43.33	27.50	3.95	0.84
23	I strive to make healthy dietary choices by considering the impact of pork on my overall well-being.	Assam	0.00	6.66	16.66	55.00	21.66	3.91	0.80
		Manipur	0.00	0.00	3.33	51.66	45.00	4.41	0.56
		Pooled	0.00	3.33	10.00	53.33	33.33	4.16	0.78
24	The credibility and reputation of retailers and suppliers are essential in earning my trust in pork products.	Assam	3.33	10.00	21.66	35.00	30.00	3.78	1.09
		Manipur	0.00	0.00	5.00	46.66	48.33	4.43	0.59
		Pooled	1.66	5.00	13.33	40.83	39.16	4.10	0.97

Table 2: Results Of Cronbach's Alpha Coefficients, Mean And Standard Deviations Of The Pork Quality And Consumption

Sl. no.	Scale	State	n	Cronbach's Alpha	$\bar{X}$	SD
	Pork quality and consumption	Assam	60	0.90	3.84	0.87
		Manipur	60	0.83	4.21	0.75
		Pooled	120	0.90	4.03	0.83

Table 3: Results Of Comparing The Two States Attitudes Towards Pork Quality And Consumption

Scale	State	Mean $\pm$ SD	Range	Comparison
Pork Quality and consumption	Assam	92.28 $\pm$ 11.70	68.00-116.00	z = -3.88**, P = 0.00
	Manipur	101.16 $\pm$ 7.65	88.00-117.00	

Conclusion

The study highlights clear differences in consumer attitudes toward pork quality in Assam and Manipur, with Manipur showing significantly higher concern for health, safety, and ethical production practices. This suggests strong potential for premium, organic and ethically sourced pork in Manipur. In Assam, the variability in attitudes points to a need for awareness campaigns to educate consumers about quality and safety aspects. For producers and policymakers, the findings stress the importance of promoting traceable, hygienic and welfare-oriented pig farming practices. Enhancing training for local farmers and AI technicians, along with improved veterinary care, could really help and

aligning supply chains with consumer expectations can boost market value and consumer trust. These insights can guide targeted interventions to improve pork quality and consumption in Northeast India.

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