Original Research Article

Consumer preference for goat meat in Sierra Leone

ABSTRACT

Meat constitutes one of the primary sources of protein, fat, vitamins, and minerals in the human diet. The worldwide demand for meat and other products from animals has soared. With the increasing demand for meat products, increased meat marketing may boost the capacity to satisfy financial responsibilities and improve living conditions. Comprehending consumer meat consumption patterns will aid the development of small ruminants and the livestock industry. The study assesses consumers' preference for goat meat in Sierra Leone. A semi-structured questionnaire was used to collect information from 367 goat meat consumers in four cities in Sierra Leone. The Statistical Package for Social Sciences (SPSS) was used to analyze the data. The result revealed that 57.2% of the consumers liked goat meat to a great extent. The most important reasons for liking goat meat were flavor (53.7%) and taste (23.2%). Most consumers bought goat meat based on price. The level of education and religion are the socioeconomic factors that positively influence consumer preference for goat meat. Therefore, disseminating these results is crucial, as knowledge of present and probable demand would help extension workers educate and encourage farmers to produce what is needed in the market. Thus, this would enhance farmers' access and bargaining power in the market, increasing incomes and improving livestock farmers' livelihoods.

Keywords: Consumer preference, Consumption, Goat meat

1. INTRODUCTION

The livestock sector contributes greatly to the economy and livelihood by producing animals and livestock products such as milk, meat, eggs, hides, skins, and wool [1]. The human diet completely depends on meat as one of the main sources of dietary protein, fat, vitamin, and minerals [2,3]. Globally, there has been an increased demand for meat and other animal products [4,5]. The main factors in developing countries are the growth of metropolitan areas, increased incomes, and increased populations [6]. Beyond enabling a food revolution, increasing the demand for meat and animal products in developing countries has given local smallholder producers significant opportunities as they enter the expanding market [7,8]. The behavior of meat consumers will determine how the livestock industry, specifically the small ruminant industry, will develop [9]. According to consumer theory, tastes and preferences influence how consumers behave and are reflected in the market by how they choose to buy meat with visible and unseen qualities [10]. In addition to family and consumer characteristics, numerous surveys have shown that customers are becoming more interested in the qualities and properties of meat [11,12]. These reservations will probably influence the way customers buy meat [12].

Red meat provides a concentrated energy source, and meat lipids facilitate the absorption of fat-soluble vitamins, reducing the risk of a vitamin shortage [8]. Red meat has certain nutritional benefits but also contains a lot of saturated fat and cholesterol [13]. Due to the

high amount of saturated fat and cholesterol in red meat, excessive intake of red meat and its products is associated with a higher chance of evolving metabolic disorders such as obesity, insulin resistance, metabolic dysfunctions, and related metabolic diseases [14,15].

Consumers worldwide are increasingly concerned about their health and are better informed about the effects of the food they eat, especially meat [16]. A new consumer category that wants healthy foods has emerged due to increased consumer awareness [17]. Chevon (goat meat) is healthier than other red meats due to its chemical makeup, which affects its fat content and fatty acid profile [8]. In addition to being a rich source of dietary protein for people, chevon is a healthy option due to its relatively low concentration of total fat, saturated fatty acids, and cholesterol. Goat meat chemical makeup promotes health and satisfies consumer demands for nutritious foods, which accounts for its growing popularity and demand [15]. The rise in goat meat popularity and demand is crucial to meeting the need for animal-derived protein sources for human consumption, fuelled by the growth of urban areas, rising earnings, and a desire for a better standard of living. Consequently, Goat meat may be able to meet a unique market need. Due to its leanness and advantageous fatty acid profile, goat meat is becoming more and more popular in the international meat market as health-conscious consumers choose leaner and healthier meat [18].

Table 1. Comparative chart of the nutrient composition of chevon (goat meat). Adapted from Lalhriatpuii and Singh [18].

per 85 g Cooked/Roasted	Calories	Fat (g)	Saturated Fat (g)	Cholesterol (mg)	Protein (g)	Iron (mg)
Chevon	122	2.8	0.79	63.8	23	3.2
Chicken	162	6.3	1.7	76.0	25	1.5
Beef	179	7.9	3.0	73.1	25	2.9
Pork	180	8.2	2.9	73.2	25	2.7
Lamb	175	8.1	2.9	78.2	24	1.4

By 2050, there will be nine billion people on the planet [19]. The demand for animal-derived meat and other products for human consumption is expected to expand much more due to this enormous population growth [20]. The production of meat and animal products must be efficient and sustainable to meet the increasing demand. Due to the population-driven growth in the demand for animal-derived protein for human consumption [21], goats have a tremendous opportunity to contribute considerably to the supply of meat and other protein-rich products.

Comprehending consumer meat consumption patterns will help the development of small ruminants and the livestock industry. However, there is a lack of quantifiable data on consumer demand and preference for goat meat. The lack of information and knowledge about marketing small ruminants and their products is a significant issue. This fails to recognize the contribution of these animals to the livestock industry's growth. Although research has been done on livestock and livestock products, there has not been much done on consumer preferences for goat meat [22] or specific research on how people in Sierra Leone consume meat. This restriction has produced an important informational gap between livestock production and consumption chains, particularly for small ruminants. Therefore, this study assesses the preference for goat meat in Sierra Leone.

2. METHODOLOGY

2.1. Study Area

Sierra Leone is located in western Africa and has a population of approximately 8 million people [23]. Freetown is the country's largest and capital city. Sierra Leone is bordered to the east and northwest by the Republic of Guinea and to the south by the Republic of Liberia. Covering an area of 71,740 km2 in total (27,699 sq mi). Sixteen districts and five regions comprise the nation (15 agricultural districts). Each district is divided into chiefdoms, each of which is made up of a large number of villages. Sierra Leone has a tropical climate and a diversity of ecosystems, including savannas and rainforests. The country has an arid equatorial climate with two distinct rainy and dry seasons. Although the rainy season begins in May and ends in November, the dry season begins in November and lasts until April. The main economic activity in Sierra Leone is agriculture, which provides more than 75% of all income and represents 47% of the national gross domestic product (GDP) [24]. Ruminant livestock production methods have traditionally been classified as extensive, low-input, free-range, or conventional.

2.2. Sampling procedure

The exploratory aspect of the study is supported by first-hand information collected from a survey of goat meat consumers in Freetown, Bo, Kenema, and Makeni. Due to their high population, these cities are the main consumers of livestock products, especially goat meat. The survey was carried out in 2021 between September and November. Study participants were chosen using a practical sampling technique because most goat meat is consumed and purchased regularly. Customers who bought goat meat from traditional retailers, such as street vendors, butchers, slaughterhouses, and weekly markets, were randomly stopped for this study. They underwent a face-to-face interview after making a meat transaction. Although the schedule was written in English, it was carried out in Krio so that respondents could understand it. The responses of 96 Freetown respondents, 88 Bo respondents, 93 Kenema respondents, and 90 from Makeni, out of 100 consumers surveyed in each city, were deemed sufficient for data analysis, and the responses of the other respondents were rejected. Therefore, 367 respondents made up the study sample.

2.3 Data Analysis

Data were collected, processed, and coded in IBM SPSS Statistics-22 for analysis. Using descriptive statistics, such as percentages, frequency distributions, and cross-tabulations, we explored several fundamental facts regarding respondents' consumption and purchasing preferences and their demographic characteristics. Multiple regression analysis (ordinary least squares) was used to identify the socioeconomic factors determining consumers' preference for goat meat. The multiple linear regression model for consumers' preference for goat meat is constructed as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3+X_3 + b_4X_4 + b_5X_5 + b_6+X_6 + b_7X_7 +b_8X_8 +b_9X_9 + u$$

Where,

Y = Consumer's preference
X_1 = Gender
X_2 = Age (years)
X_3 = Level of education (no years of school)
X_4 = Marital status
X_5 = Family size
X_6 = Tribe
X_7 = Religion

X_8 = Occupation
X_9 = Monthly income (Le)
b1– b9 = Regression coefficients
a = Constant term
u = Error term

3. RESULTS AND DISCUSSION

3.1. Socioeconomic characteristics of the respondents

Table 2 shows the socioeconomic characteristics of the respondents. The study sample consisted of men (34.1%) and women (65.9%). More than half (61.3%) are between 30 and 49 years old. Most were educated in secondary school (51.0%) or graduated (35.4%). Most of them were married (64.6%). The family size of 71.1% comprised 6 to 10 members. Regarding occupation, the sample was diverse. However, businesspeople and private and public sector employees were relatively common. Most respondents reported their monthly income of 1 to 5 thousand Leones.

Table 2: socioeconomic characteristics of respondents (n=367)

Variable	Categories	Frequency	Percentage
Gender	Male	125	34.1
	Female	242	65.9
Age	18-29	76	20.7
	30-49	225	61.3
	50 years and older	66	18.0
Education	No education	8	2.2
	Primary	42	11.4
	Secondary	187	51.0
	Tertiary	130	35.4
Marital status	Single	109	29.7
	Married	237	64.6
	Others	21	5.7
Family size	1-5	81	22.1
	6-10	261	71.1
	11 and above	25	6.8
Occupation	Public-sector employees	52	14.2
	Private-sector employees	90	24.5
	Businessmen	162	44.1
	Retired persons	18	4.9
	Students	10	2.7
	Housewives	19	5.2
	Farmer	16	4.4
Monthly income	Less than 1000	19	5.2
	1000-5000	207	56.4
	6000-10,000	88	24.0
	11,000 or more	22	6.0
	No income	31	8.4

Source: Field survey, 2022

3.2. Consumer preference for goat meat

The study findings revealed that consumers liked to consume goat meat, 57.2% liked goat meat to a great extent, and 28.4% somewhat liked goat meat (Table 3). A lower percentage (8.7%) liked goat meat very little and (5.7%) did not like goat meat. The most important reasons for liking goat meat in Sierra Leone were flavor (53.7%) and taste (23.2%). Goat meat has a richer red color, a rougher texture, and a distinct flavor and smell compared to lamb and mutton [25,26]. The flavor and fragrance of goat meat are complex. These sensory characteristics are influenced by species, age, fat, anatomical position, gender, nutrition, and cooking technique. Consumers can readily identify the fragrance and flavor of meat and evaluate its acceptability [25,26,27].

In this study, 53.3% of consumers preferred to buy goat meat based on price. Consumers would like to pay less to enjoy goat meat's delicate taste and desirable flavor. Hoffman et al. [28] indicated that consumers' buying behavior depended on the product's quality, price, and promotion. Price is considered the most significant variable when consumers make purchasing decisions [29]. However, consumers also preferred food products that were safe, nutritious, and high quality [30], as evident in this study.

Table 3: Consumer preference for goat meat (n=367)

Consumption preference	Category	Frequency	Percentage
Extent of liking	Not at all	21	5.7
	Very little	32	8.7
	Somewhat	104	28.4
	To a great extent	210	57.2
	Good for health	34	9.3
Reason for liking	Nutritious	20	5.4
	Tenderness	18	4.9
	Flavor	197	53.7
	Color	13	3.5
	Taste	85	23.2
Factors influencing purchasing	Price	203	55.3
	Easy to purchase	52	14.2
	Packaging	17	4.6
	Grading	30	8.2
	Meat inspection label	65	17.7

Sources: Field survey, 2022

3.3. Socioeconomic factors determine the consumer's preference for goat meat.

Multiple regression analyses (ordinary least squares) were performed to identify the socioeconomic factors determining goat meat preference (Table 4). The overall model was considered to fit the data having a significant $F(9, 357) = 195.44$, $p < 0.001$, $R2 = 0.83$. This indicates that 83% of the variation in the factors that determine the preference for goat meat was explained by the independent variables included in the model.

The study revealed that education ($p<0.01$) and religion ($p<0.01$) are the positive and significant factor that has a relationship with the preference for goat meat. At the same time, there is a significant negative relationship with gender ($p<0.01$), age ($p<0.02$), and occupation ($p<0.01$). Education was significant, which means that the more educated they were, the more likely they prefer goat meat. Religion is another factor that determines consumer preference for goat meat; that is, a person's religion determines the tendency to

prefer goat meat. Muslims comprise 78.5% of the Sierra Leone population, and goat meat is halal in Islam.

Table 4: Socioeconomic factors determine the preference for goat meat.

Variables	Regression coefficient	Standard error	T-value	Significant
(Constant)	0.91	0.22	4.19	0.00
Gender (X_1)	-0.12	0.02	-6.03	0.00
Age (X_2)	-0.04	0.02	-2.36	0.02
Education (X_3)	0.12	0.02	5.59	0.00
Marital status (X_4)	0.01	0.03	0.42	0.67
family size (X_5)	-0.03	0.03	-1.09	0.28
Tribe (X_6)	-0.01	0.02	-0.80	0.43
Religion (X_7)	0.13	0.04	3.382	0.00
Occupation (X_8)	-0.11	0.01	-8.82	0.00
Income (X_9)	-0.02	0.02	-1.50	0.13
		R square	Adjusted R square	F
		0.83	0.82	195.44

Source: Authors' computations

3.4. Preferred consumption parts of goat meat

Table 5 shows that most people (39.5%) prefer to consume the breast part of goat meat, followed by the leg (14.2%) and the shoulder (11.4%). In Western nations, the most popular portions of a goat carcass are the loin, the dorsal trunk, and the hindlimb. In contrast, many African and Asian studies [31,32] have strongly preferred cuts in the breast area. These factors are significant significance for the marketing of goats in various countries. Low carcass fat and high lean content are associated with a high value for hindlimb cuts [31,32].

Table 5: Preferred consumption parts of goat meat (n=367)

Variables	**Frequency**	**Percentage**
Head	9	2.5
Neck	18	4.9
Shoulder	42	11.4
Rib	22	6.0
Loin	26	7.1
Leg	52	14.2
Hind shank	13	3.5
Flank	16	4.4
Breast	145	39.5
Foreshank	11	3.0
Skin	7	1.9
Offal	6	1.6

Sources: Field survey, 2022

3.5. Preferred consumption form of goat meat

Figure 1 shows that most people (55.1%) prefer to eat goat pepper soup, followed by stew (16.6%) and barbecued (11.4%). Most people consume goat meat in restaurant bars and street markets that prepare the goat meat in the form of pepper soup, stew, and barbecue. Consumers have no choice but to consume it in the most available form.

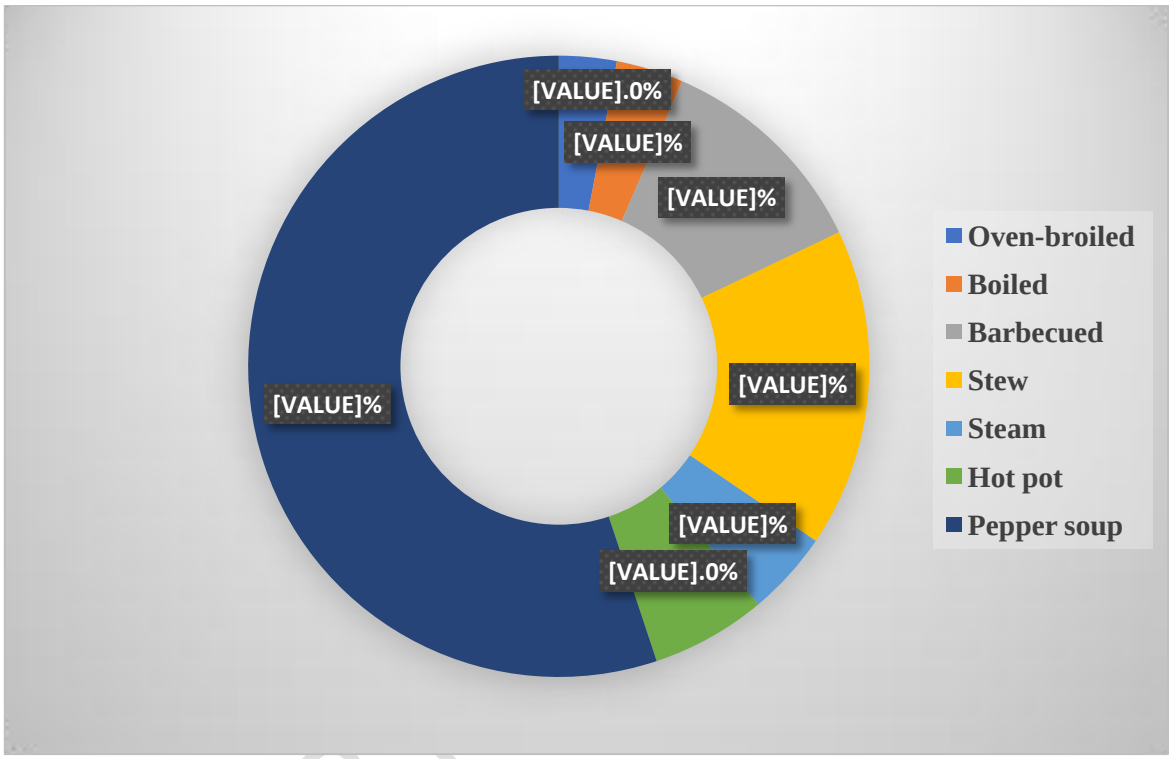

Figure 1: Preferred consumption form of goat meat

3.6. Consumption frequency of goat meat

Figure 2 presents the frequency of goat meat consumption among the respondents. Among them, goat meat consumption was relatively more common three times a week (46.3%). However, 20.7% liked to consume goat meat twice a week, and 14.7% once a week. Goat meat is not frequently cooked at home, except at restaurant bars and street markets. So it is not easy to consume goat meat every day.

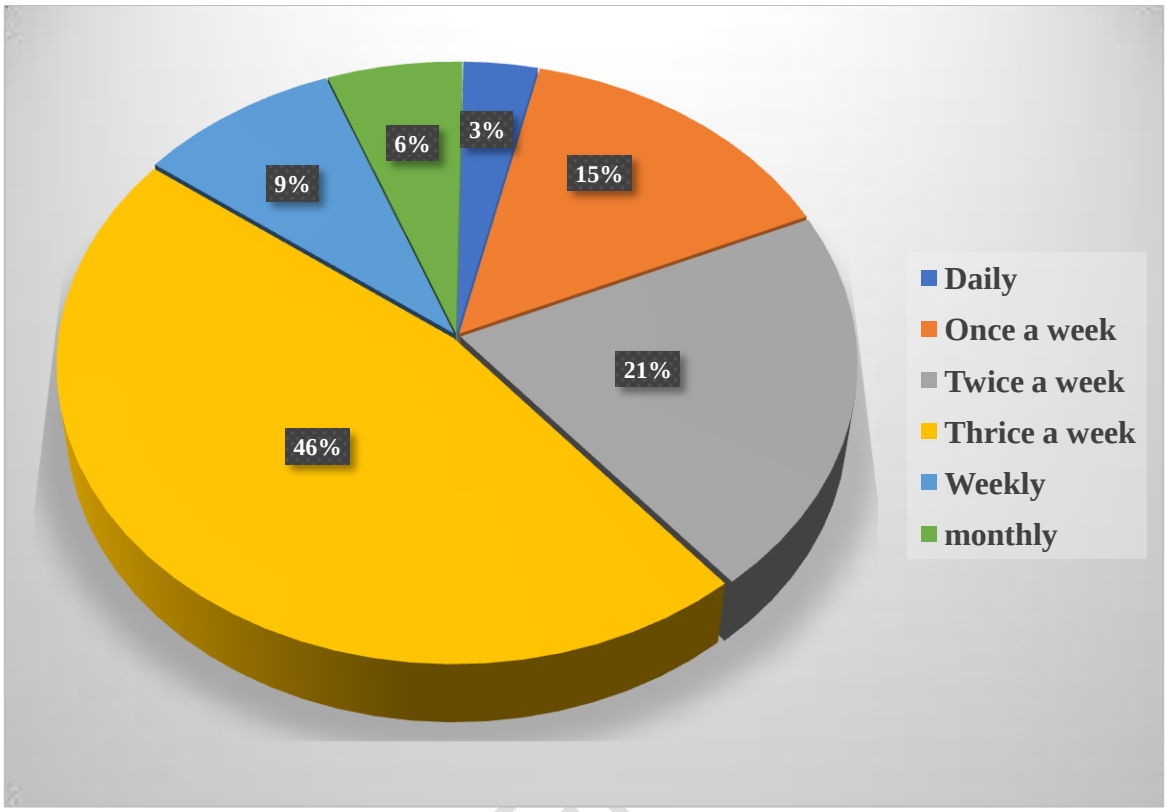

Figure 2: Goat meat consumption frequency

3.7. Preferred Consumption Event/location of goat meat

Figure 3 shows that most of the respondents (57.2%) consume goat meat in the restaurant, followed by the night market (16.9%) and at home (15.3%). Some consume goat meat at festivals, weddings, and business meetings. Goat meat is not always available; the best place to see goat meat is in a restaurant that prepares it in pepper soup, sometimes in a stew. Customers come mainly in the evening to relax and eat goat pepper soup. Some people prefer to buy them at the street market at night, mostly cooked in barbecued form.

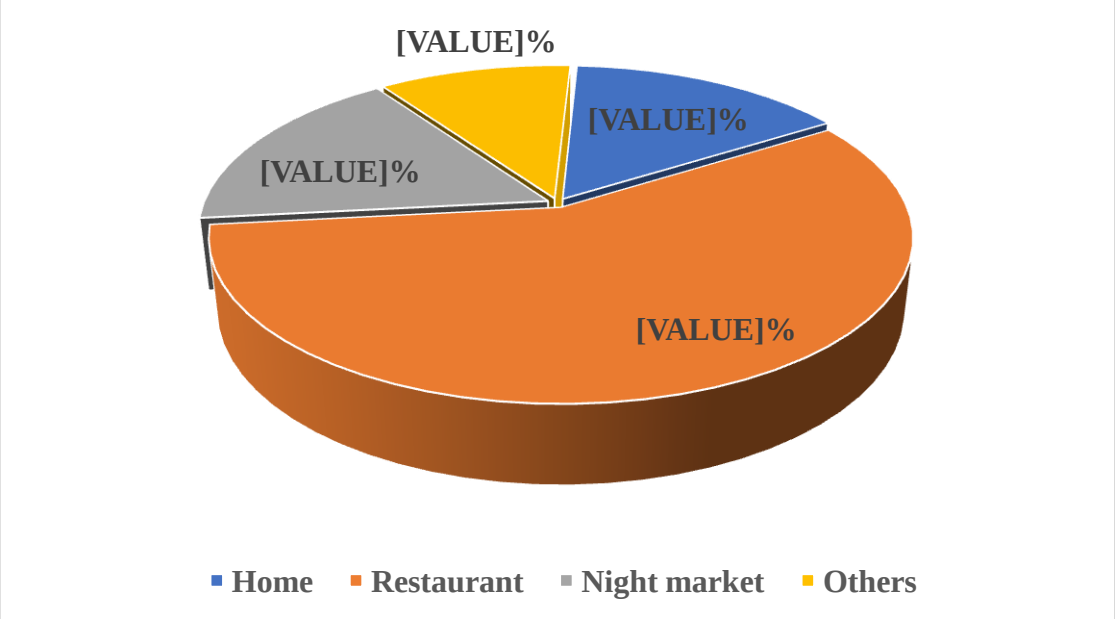

Figure 3: Preferred Consumption Event/location of goat meat

4. CONCLUSIONS

The result revealed that most consumers liked goat meat to a great extent. The most important reasons for liking goat meat were flavor and taste. Most consumers bought goat meat based on price. Among them, goat meat consumption was relatively more common three times a week. Most people prefer goat pepper soup, followed by stew and barbecued. Level of education, religion, sex, age, and occupation are the socioeconomic factors that influence the preference for goat meat. Therefore, it is crucial to disseminate these results, as knowledge of the present and projected demand would help extension workers educate and encourage farmers to provide what the market requires. Thus, this would increase farmer market access and bargaining power, raise incomes, and enhance livestock farmers' living standards.

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