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INVESTIGATION OF GOAT MEAT CONSUMPTION IN RELATION TO MARKET POTENTIAL AMONG MAJOR STORES IN EASTERN CAPE, SOUTH AFRICA

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ABSTRACT

There is low commercial availability of goat meat in retail outlets such as supermarkets and butcheries due to the limited supply and cultural beliefs in many nations of the world, especially in sub-Saharan Africa. This study aimed to find potential customers for goat meat if it were made readily available in retail outlets. Two hundred respondents from cities and towns (Port Elizabeth, East London, Mthatha, King's Williams town, Grahamstown, Alice, Buthertown, Fort Beaufort, Queenstown, Craddock, Adelaide, Port Alfred, Stutterheim, and Peddie) in the Eastern Cape, South Africa, were randomly selected and interviewed using structured Google form questionnaires. Data were analyzed using descriptive statistics and *chi-square* tests. Participants answered questions about goat meat consumption in relation to other meats. Factors limiting the consumption of goat meat were also investigated. About 66% of respondents had positive views of goat meat, while 23.5% were neutral. Only 10.5 % had unfavourable views concerning goat meat. The availability of goat meat in the market was the most limiting factor for 60% of the respondents, while 15% said price was their limiting factor. Other factors limiting goat meat consumption were personal preferences, religion, aversion to testing, price of goat meat, aversion to smell, and fattiness, with 15%, 9%, 6.5%, 5%, 4%, and 0.5% of respondents, respectively. About 46% of the total respondents preferred goat meat from a supermarket or butchery, and only 6.5% preferred vendors. Only 26% preferred live goats, while 61.5% preferred a portion of meat from slaughtered goats. The *chi-square* test also revealed a significant association ($P < 0.05$) between attitude/view of goat meat consumption with gender (0.00), age (0.001), nationality (0.027) and ethnicity (0.041). However, the association between attitudes/views towards goat meat consumption and small households (0.262) or religion (0.142) was not significant ($P > 0.05$). Although demand for goat meat is expected to rise as people receive more information on nutritional benefits and cooking methods, it could be concluded that consumers are willing to consume it and that there is market potential for it as a major store product.

Key words: availability, goat meat, consumer perceptions, purchasing drivers, limiting factors, future consumption, major stores, market, South Africa

INTRODUCTION

About one billion goats are kept for fibre, meat and milk production [1]. Developing countries in Asia and Africa contribute above 90% of that population [2]. Asian and African countries contribute the highest percentage to the world's population of goats, with 55.4% and 37.8%, respectively [3]. Goats' population have more than doubled in the last four decades [4]. Meat from goats is called chevon when it is sourced from older animals weighing more than 20kg, and cabrito when it is sourced from younger goats weighing 6-8 kg carcass weight [5]. Due to its nutritional attributes, goat meat is becoming more popular worldwide. Goat meat consumption has increased significantly and has become an excellent human protein source. Goat meat has lower cholesterol, total fat, and saturated fat content and has the same nutritional value as mutton [6]. The increasing popularity of chevon as a healthy food contributes to the increase in demand and consumption of goat meat and meat products. Its low fat content and high nutritional value make it a popular choice among consumers.

Marketing of chevon in retail stores is primarily influenced by the population of buyers willing to buy carcass portions. According to Erasmus and Hoffman [7], the willingness to purchase and consume meat is greatly influenced by availability. Among the barriers to buying goat meat globally, the absence in retail shops is the second influential global barrier to buying goat meat. In many cities and towns of South Africa, there is no distribution of goat meat in mainstream department stores as well as in butcheries. Goats are marketed informally as live goats in local communities for backyard slaughter [8,9]. This leads to less supply of goats in formal markets. South Africa is one of the countries with a high population of goats [10], with indigenous goats commonly kept by communal households. Still, despite that, they do not significantly contribute to the economy. Although goat meat is extensively consumed in South Africa, it is rarely available in mainstream stores and butcheries. Informal marketing of goats makes finding goat meat in butcheries or supermarket shelves challenging. The information can be used to improve marketing and advertisement of goat meat and goat meat products, and understanding consumers' views is a positive step towards commercialization of goat meat market. Commercializing and formalizing the indigenous goat market would help increase household income and enhance the nation's food security. If a potential market is discovered, goat meat can receive more marketing attention, and consumers will be educated on the benefits of goat meat. Smaller households may appreciate the availability of small, packaged portions rather than live goats. Many studies focus on the production aspect of goat meat, whereas limited research focuses on understanding consumers' views. Also, there is little

contribution of annual global small ruminants publications from Africa (13.5% compared to Europe's 30%), while goat sustainability is higher in Africa [11]. This study will add African contribution to global ruminants' publications. Therefore, the study aimed to investigate goat meat consumption in relation to market potential amongst mainstream stores in South Africa.

MATERIALS AND METHODS

Survey Instrument

Two hundred respondents from the study area answered and completed the structured questionnaire via email. An online questionnaire was developed on Google Forms. The online questionnaire was chosen because of its low cost and ability to reduce face-to-face contact during the COVID-19 pandemic. The sampling and the survey application were emailed, as described by Mtolo *et al.* [12]. Respondents were randomly selected from major towns and cities in Eastern Cape, South Africa. These towns and cities are Port Elizabeth, East London, Mthatha, King's Williams town, Grahamstown, Alice, Buthertown, Fort Beaufort, Queenstown, Craddock, Adelaide, Port Alfred, Stutterheim and Peddie. Participants answered questions about consumption, store availability and their views on goat meat, including the demographic questions.

Survey contents

The survey questionnaire aimed to gather information from goat meat consumers and potential consumers. The first feature of the online questionnaire described the survey in detail and requested consent from participants. Information collected in the survey was categorized into three sections: (i) demographics, (ii) current consumption analysis and (iii) potential future consumption analysis. All independent variables were placed under demographics. Demographical information made it possible to identify respondents in particular groups and relate demographic differences to responses given to other questions.

Questions relating to gender, age, occupation, religion, citizenship, ethnicity and household size were included in the demographics. Current consumption analysis included questions to determine consumers' current consumption patterns and limitations to goat meat consumption. Participants were asked when they last consumed goat meat, what mostly limits their consumption and the effect of goat meat scarcity on their consumption patterns. To analyze potential future consumption analysis, questions were asked on the place of purchase, influencing factors on meat purchasing decisions, alternatives to goat meat and overall view of goat meat. Participants were asked to rank the importance of price, fat content and

nature of meat. They were also asked to select the most influential meat purchasing driver from meat colour, price, nature and fat content. Participants were asked about their preference for live goats, slaughtered whole goats and smaller portions to determine the most preferred type of meat. Participants were also asked if they would replace other types of meat with goat meat. They were also asked about the type of meat they consumed less. Finally, participants were asked if their consumption frequency of goat meat was likely to increase if provided with more information about nutritional value and cooking methods.

Data collection method

Data were collected using an anonymous online survey developed from Google Forms. No identifying values could link the data to a particular participant. A survey link was created and shared via WhatsApp groups and email for respondents. Towns and cities selected had at least three major stores and one abattoir. Face-to-face assistance was minimized as a precautionary measure against COVID-19. Participating in the survey was voluntary. In addition, participants' recruitment was achieved by sharing the link on social media, such as public WhatsApp groups and Facebook pages or by people referred to by other users. A total of 200 questionnaires were selected randomly for data analysis.

Data analysis

Descriptive statistics (frequencies and percentages) were used to analyze data. A *Chi-square* test was run to determine associations between demographics, attitudes towards goat meat, and other variables. Microsoft Excel software version 16.0 was used to generate descriptive statistics, and Statistical Package for the Social Sciences (SPSS) version 27.0 (2020) was used to run the *chi-square* test at a 5% significance level.

Ethical clearance

Ethical clearance was obtained from the University of Fort Hare Research Ethics Committee before the commencement of the survey study, ETHICS CLEARANCE REC-270710-028-RA Level 01.

RESULTS AND DISCUSSION

Demographic variables

Table 1 shows the sample profile of the participants in the study. This table shows that 51.5 % of the respondents are male, while 48 % are females. About 0.5 % of participants preferred not to mention their gender. The most dominant age group in the survey was 18-25 years, with 68%, followed by above 30 years, with 20%. The

26-30 age group had the least participants. Most participants had a religious inclination, with 86% being Christians, 12.5% African Traditional religion and 1.5% Atheist. The nationality shows that 75% of participants were South African citizens, and 25% were non-South Africans. Respondents were from 6 different South African ethnic groups (Figure 1). Xhosa (69.5%), Zulu (4.5%), Hlubi (0.5%), Nguni (0.5%) and Tsonga (0.5%). Of the others, 25% consisted of ethnicities outside South Africa.

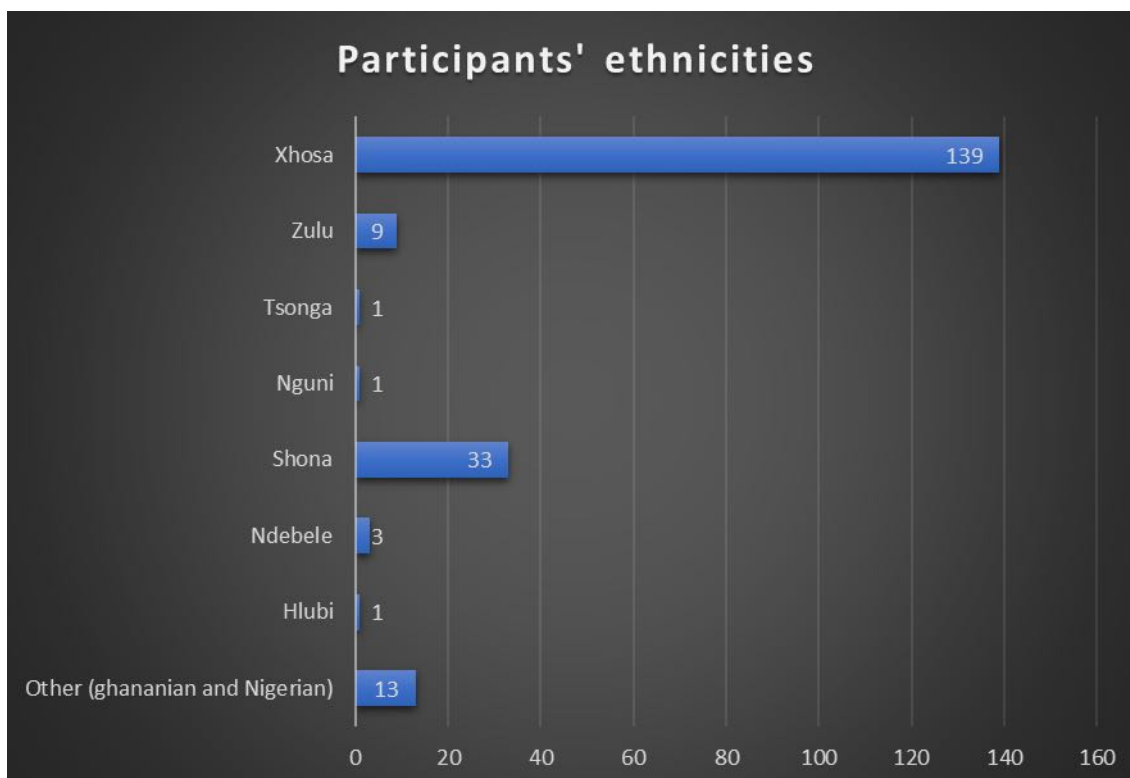


Figure 1: A summary of participants' ethnicities in frequencies

Attitudes towards consumption of goat meat

The attitudes of respondents partitioned by religion are shown in Figure 2. Of the 172 Christian respondents, 70 showed a positive attitude towards goat meat consumption. About 10 and 3 African traditionalists and atheists, respectively had neutral opinions towards goat meat consumption. This indicates that in South Africa, some denominations consider the consumption of goat meat taboo due to its use in traditional rituals. All non-South African respondents had either positive or neutral views on goat meat and had no religious restrictions attached to the consumption of goat meat. When partitioned by citizenship of South Africa and otherwise (Figure 3), about 55 (out of 150) South African and 18 (out of 50) non-South African respondents had positive attitudes towards the consumption of goat meat. Ethnic groups such as Shona, Zulu and those from Nigeria and Ghana had

more participants having positive views on goat meat. This study proved that although negative perceptions of goat meat exist among South African natives, they have decreased over the years. Previous studies conducted by Simela *et al.* [13] and Modiba [14] reported that South Africans associated goat meat with traditional use only and did not consider it an essential part of their diet, although they consumed it during rituals. Some non-South Africans from the study area said that they liked goat meat to the extent that they even went to surrounding farms in search of live goats for personal slaughter. This agreed with the findings of Yesufu [15], who stated that Nigerians prefer goat meat to other red meat types, including beef. When attitude towards goat meat consumption is clustered by age range (Figure 4), about 58% (136), 4% (24), and 14% (40) of respondents with age range 18-25, 26-30, and above 30, respectively had positive attitudes toward its consumption.

Regarding the consumption of goat meat, the present study found a significant association between nationality and attitude ($P = 0.027$), gender and attitude ($P < 0.001$), age and attitude ($P = 0.001$), and ethnicity and attitude ($P = 0.041$) (Table 4). A significant association was also realized between participants' age and attitude towards goat meat. This contrasted with previous results of Knight [17], who had different results showing ethnicity and age as statistically insignificant in influencing goat meat consumption. However, the association between household size, preferred goat type, religion and attitude towards goat meat were insignificant.

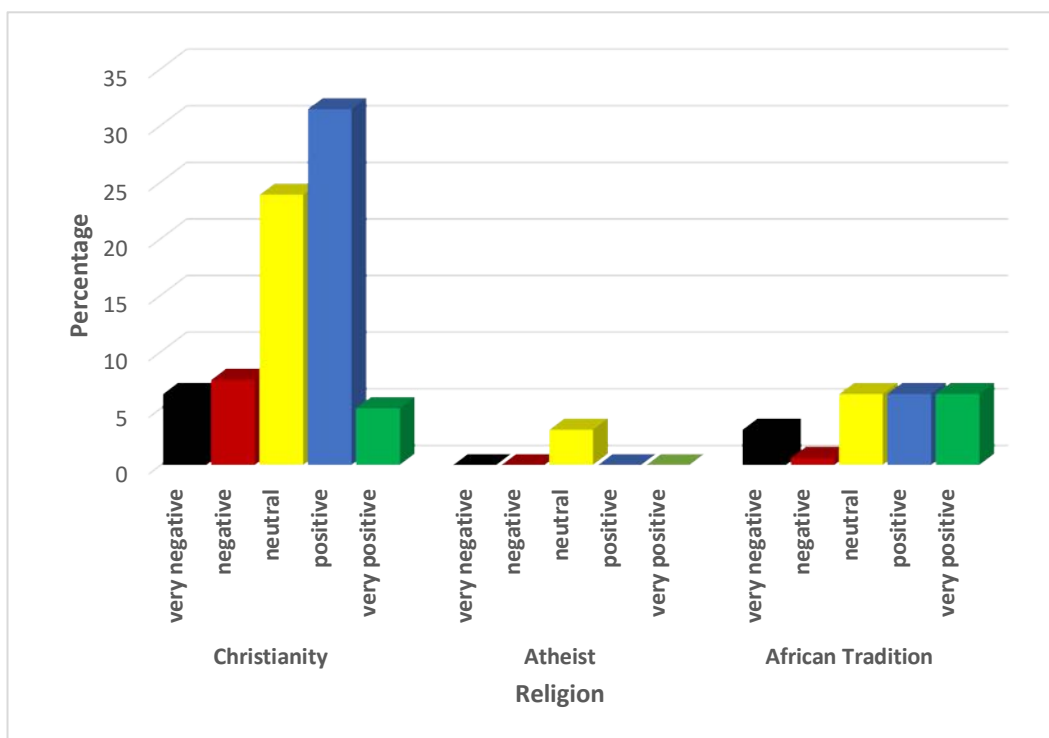


Figure 2: Attitudes towards goat meat across different religions

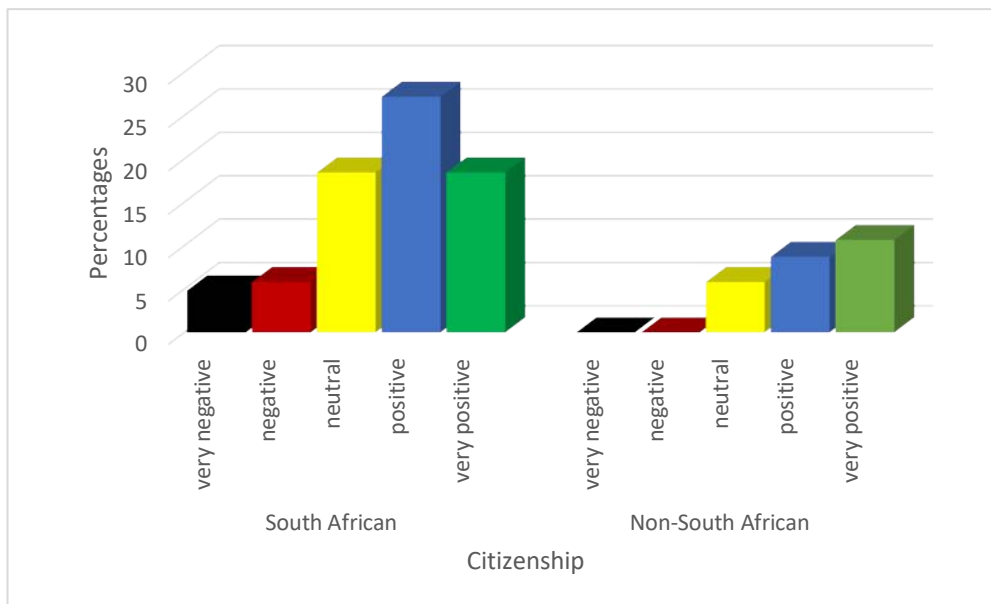


Figure 3: Attitudes towards goat meat of South Africans and Non-South Africans

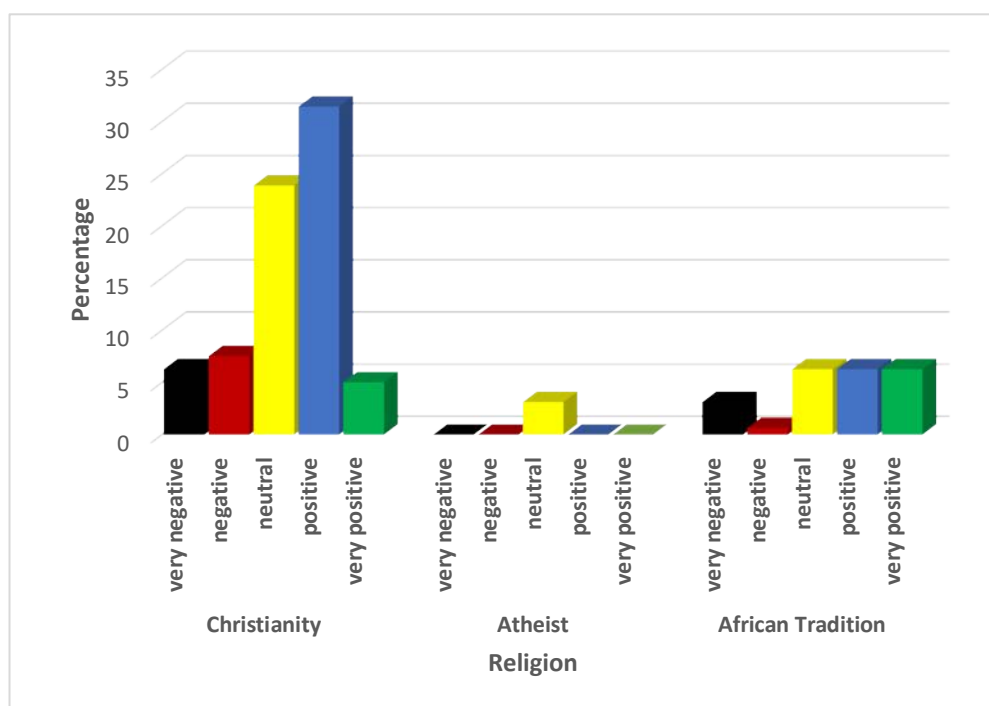


Figure 4: Attitudes towards goat meat across different age groups

Current consumption analysis

Table 2 and Figure 5 reveal that 28.5% last consumed goat meat less than 3 months prior, 64% more than 3 months prior, and 7.5% had never consumed it. Availability (60%) was the most limiting factor for goat meat consumption, followed by personal preferences (15%). Other limiting factors were religion (9%), do not like the taste (6.5%), the price of goat meat (5%), do not like the smell (4%), and it is fatty (0.5%). About 34% of the participants admitted that the absence of goat meat hindered their consumption, 30.5% said it disturbed their consumption slightly, while 35.5% were unaffected.

The potential of future consumption analysis of goat meat is shown in Table 3. About 46% of the respondents preferred to purchase their goat from the supermarket. The purchase of smaller portions had the highest percentage (61.5%) compared to other preferences of goat meat purchase types. As revealed by the respondents, goat meat consumption frequency showed a 'once every month' consumption pattern to be the highest (36%). Modiba [14] and Mandolesi *et al.* [22] confirmed young consumers' preference for smaller portions. According to Modiba [14], the choice for cuts versus entire carcasses is because they require less preparation than live goats or whole carcasses, which must be slaughtered and cut into pieces before cooking. Smaller portions are easier to cut and ready to cook. Another reason for this study's high preference for smaller portions is the

modal household size. Most participants had one or two individuals in their household, hence, whole carcasses would be too much for smaller homes.

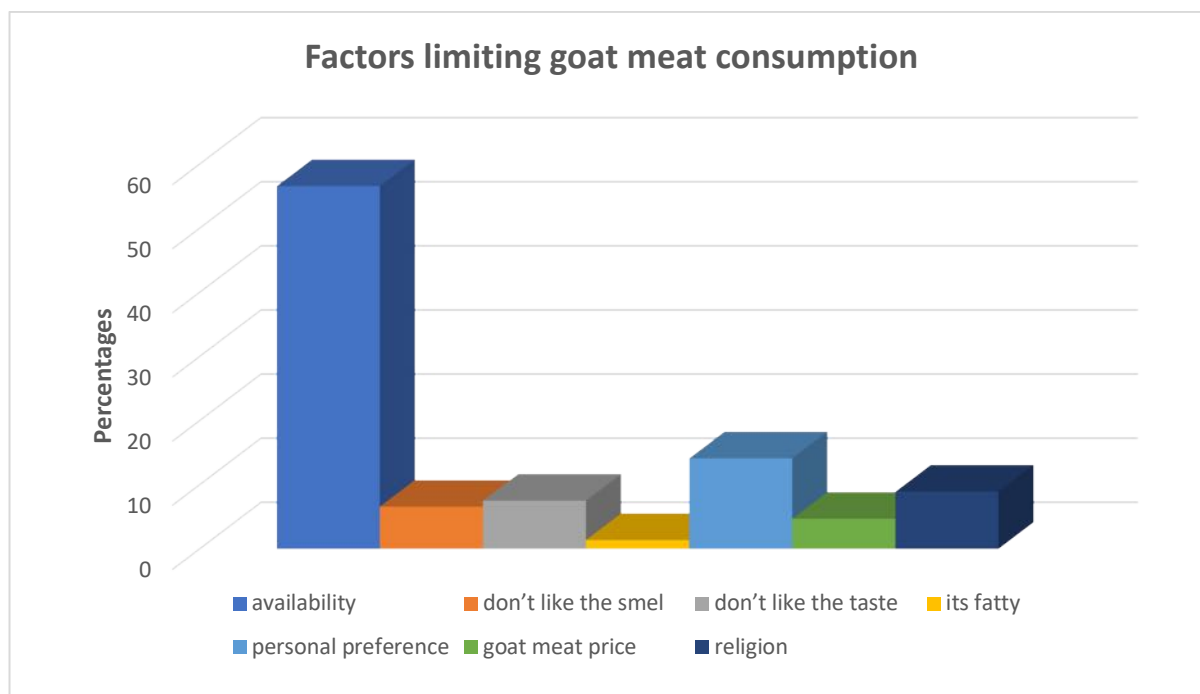


Figure 5: Factors affecting goat meat consumption in relation to market potential in South Africa

In this study (Figure 5), availability was the most limiting factor for goat meat consumption in the study area. These findings agree with the conclusions of Modibia [14], who found the most limiting factor for goat meat consumption to be availability and limited accessibility to goat meat and products. Respondents from Modiba's [14] study in Johannesburg mentioned that they were unaware that goat meat was being sold in the country. This further raises the notion that more marketing attention needs to be given to goat products to raise awareness of the availability of goat meat and products in areas where they are being marketed. People in the study area also showed an understanding of the leanness of goat meat. Only one participant gave the reason "it is fatty" as a limiting factor to goat meat consumption. According to Knight [17], some people do not consume goat meat because they consider it fatty. This contradicts literature describing goat meat as lean [18,19,20]. Other factors limiting consumers in the study area from consuming goat meat were personal preferences, religion, aversion to taste, price of goat meat and aversion to smell in chronological order from the most influential factor to the least. People's dislike for goat meat in most studies usually stems from the intense flavour and aroma associated with the meat [5]. People with a strong aversion to goat meat taste and smell are more likely to accept goat meat in

the future if provided with more nutritional information and methods of cooking goat meat that can mask the strong smell and flavour.

Future potential consumption

Purchasing preference for goat meat types was asked of participants (Figure 6). The study revealed that most of the respondents (over 120 out of 200 total respondents) preferred to buy small portions of goat meat for consumption compared to buying live goats (55) or slaughtered whole goats (30). To assess future potential consumption, participants were asked questions on goat meat purchasing drivers (Figure 7). The study revealed that price represents the highest driver (98) for purchasing decisions, compared to colour (10), fat content (40) and nature (55).

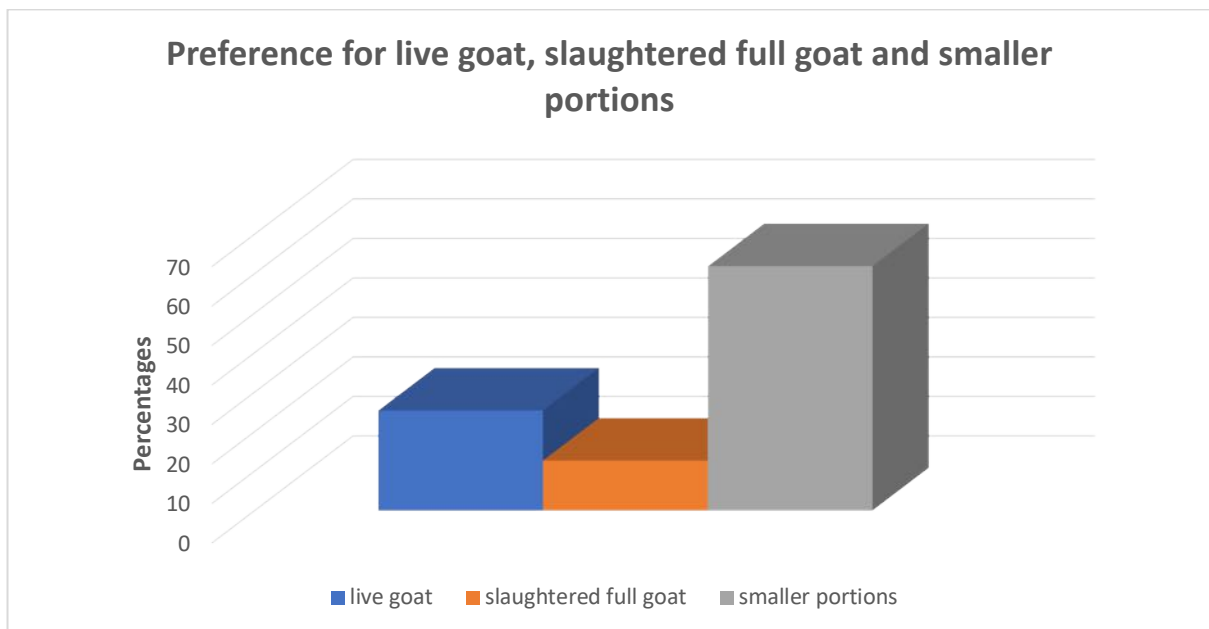


Figure 6: Participants' preference for live, slaughtered, and smaller portions of goat meat

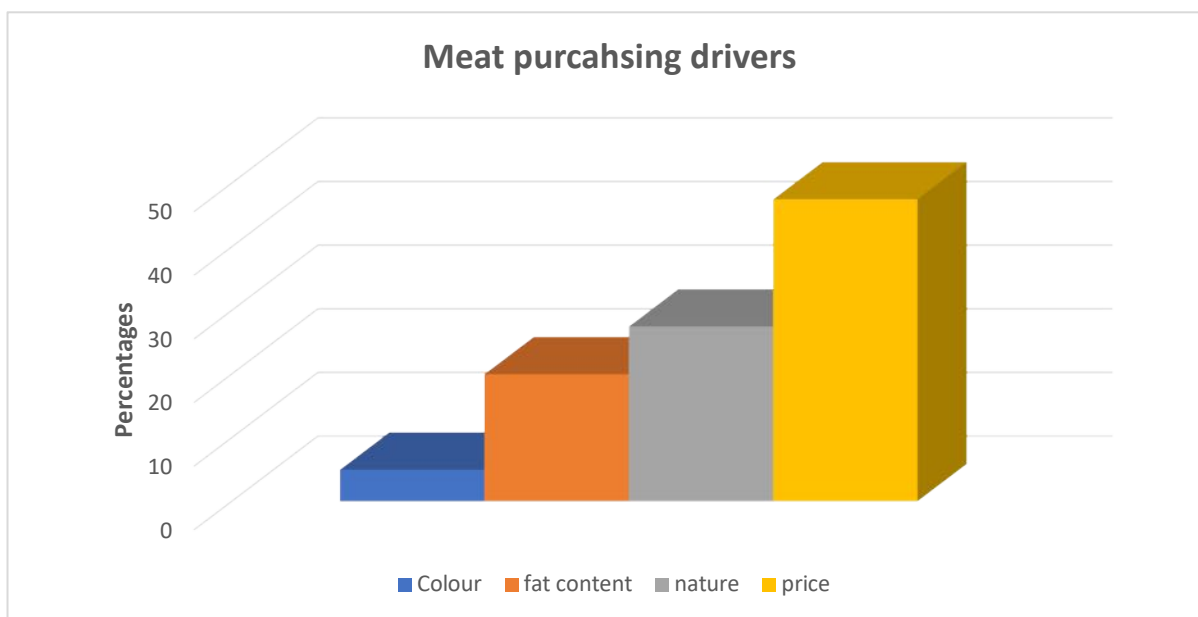


Figure 7: Most influential meat purchasing drivers among respondents

Assessing the potential future demand, participants were also asked about their expected frequency of consumption if goat meat is readily available (Table 3). The results show potential customers for goat meat if it is supplied in supermarkets and butcheries. Over 93% of participants had future intentions of consuming goat meat. Only 6.5% of respondents had no intention of purchasing goat meat in the future, and 0.5% said they would be swayed if more information on nutritional benefits and cooking methods was provided. About 84.5% of participants said they would consume less chicken, pork, lamb mutton, beef, or seafood and replace it with goat meat. About 15.5% of respondents said they would not replace any of their meats. Competitors of goat meat are significant in marketing [23]. Consumers will likely shift to goat meat consumption as these other meat prices rise. Most respondents said they would replace seafood with goat meat. Seafood was also the least consumed type of meat amongst most respondents. Chicken and lamb also had a significant number of respondents choosing to replace them with goat meat. Some respondents chose to replace chicken as it was the meat they consumed most and therefore wanted to cut on their consumption quantities and replace it with goat meat to improve variety in their diets. People in South Africa consume more poultry meat as it is cheaper than other meat types [24]. Lamb and mutton consumers will likely replace mutton with goat meat [17,23].

Most participants considered price an essential driver when purchasing meat and meat products. According to Knight [17] and Giwa [25], consumers who prioritize price in their purchasing decisions are more likely to purchase goat meat. However, this might be true if there are promotions and goat meat is cheaper.

However, this finding is debatable as purchasing frequencies decrease as price increases [26]. Above 50% of respondents regarded meat's fat content and cholesterol levels as necessary in purchasing. According to Giwa [25], people who rank fat content and cholesterol levels as important in their meat purchasing decisions are more likely to buy goat meat than those who do not. Goat meat is lean and has low cholesterol levels [20]. Therefore, people conscious of their calorie and cholesterol intake are more likely to purchase goat meat if it is readily available in supermarkets and butcheries [27].

Overall, the most influencing factor in meat purchasing decisions in the study area was the price, followed by nature, fat content and colour. This study did not address the reasons for considering price in meat purchasing decisions. Therefore, people considering price may either refer to purchasing the cheapest meat or relate the most expensive meat to high-quality meat. The people in the study area mostly had positive views on goat meat. Moreover, providing adequate nutritional information and recommended cooking methods for goat meat will subsequently increase the consumption of goat meat in the study area if goat meat is made readily available.

CONCLUSION, AND RECOMMENDATIONS FOR DEVELOPMENT

This study found a potential market for goat meat in the study area as supported by predicted future demand for goat meat. The most limiting factor for goat meat consumption in the study area was the availability of goat meat. Some South Africans who participated in the survey mentioned that their consumption of goat meat was limited by religion. However, religion does not significantly affect goat meat consumption in South Africa. No non-South Africans had religious taboos associated with consuming goat meat. Participants also preferred smaller goat meat cuts to live goats or whole carcasses. To increase demand for goat meat, advertising must be done, as many people admitted that providing the information would increase their consumption rate. Furthermore, once supply for goat meat as a mainstream product starts in some areas, supply must remain constant to ensure customer loyalty. To further expand the goat meat industry, ways must be devised to establish a formal market for goats sold for traditional purposes.

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Author contributions

Conceptualization, Makusha, and Ikusika; Methodology, Makusha and Ikusika; Software, Makusha and Ikusika; Validation, Makusha, Ikusika, and Mpendulo; Formal Analysis, Makusha; Investigation, Makusha; Resources, Makusha, Ikusika, Akinmoladun, and Mpendulo; Data Curation, Makusha; Writing – Original Draft Preparation, Makusha; Writing – Review and Editing, Ikusika and Akinmoladun; Visualization, Ikusika; Supervision, Ikusika, Akinmoladun and Mpendulo.

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Informed Consent Statement

Ethical approval and informed consent were obtained from all subjects involved in the study. The study was approved by the University of Fort Hare research ethics committee (ETHICS CLEARANCE REC-270710-028-RA Level 01).

Table 1: Participants' demographics

		Frequency	Percentages (%)
Total observations		200	100
Occupation	Working class	150	75
	Non-working class	50	25
Gender	Male	103	51.5
	Female	96	48
	Prefer not to say	1	0.5
Age	18-25	136	68
	26-30	24	12
	Above 30	40	20
Religion	Christian	172	86
	African Traditional	25	12.5
	Atheist	3	1.5
Citizenship	South African	150	75
	Non-South African	50	25
Ethnicity	Xhosa	139	69.5
	Zulu	9	4.5
	Hlubi	1	0.5
	Nguni	1	0.5
	Tsonga	1	0.5
	Shona	33	16.5
	Ndebele	3	1.5
	Other (ethnic groups from Ghana and Nigeria)	13	6.5
Household size	One member	82	41
	Two members	42	21
	Three and above	76	38

Table 2: Current consumption of goat meat by participants

		Frequencies	Percentages
How long has it been since you last consumed goat meat	Less than 3 months ago	57	28.5
	More than 3 months ago	128	64
	Never consumed before	15	7.5
Which factor mostly limits your consumption of goat meat	Availability	120	60
	Price of goat meat	30	15
	Religion	18	9
	Personal preferences	10	5
	I don't like the taste	13	6.5
	I don't like the smell	8	4
	It is fatty	1	0.5
How much has the absence of goat meat affected your consumption rate	Very much	68	34
	Slightly	61	30.5
	Not at all	71	35.5

Table 3: Potential future consumption analysis of goat meat

		Frequency	Percentage (%)
Place of purchase	Supermarket	92	46
	Butchery	88	44
	Vendor	13	6.5
	Farm	5	2.5
	Other (personal slaughter)	2	1
Preference for live goat slaughtered the whole goat and smaller portions	Smaller portions	123	61.5
	Slaughtered full goat	25	12.5
	Live goat	52	26
Frequency of consumption if goat meat is readily available	Everyday	12	6
	Once a week	57	28.5
	More than once a week	46	23
	Once every month	72	36
	Not at all	13	6.5
Which meat would you consume less and replace with goat meat	Chicken	43	21.5
	Pork	24	12
	Lamb and mutton	40	20
	Beef	18	9
	Seafood	44	22
	None	31	15.5
Which meat do you consume less	Chicken	17	8.5
	Pork	25	12.5
	Lamb and mutton	38	19
	Beef	21	10.5
	Seafood	99	49.5
Meat purchasing drivers			
Importance of price on meat purchasing decision	Very important	110	55
	Important	54	27
	Neutral	27	13.5
	Unimportant	3	1.5
	Very unimportant	6	3
Importance of fat content on meat purchasing decision	Very important	66	33
	Important	72	36
	Neutral	45	22.5
	Unimportant	11	5.5

	Very unimportant	6	3
Importance of nature of meat on purchasing decision	Very important	88	44
	Important	68	34
	Neutral	38	19
	Unimportant	6	3
What do you consider most when purchasing meat	Colour	9	4.5
	Price	96	48
	Nature	55	27.5
	Fat content	40	20
Views for goat meat			
What is your overall view of goat meat	Very positive	58	29
	Positive	74	37
	Neutral	47	23.5
	Negative	11	5.5
	Very negative	10	5
Will having more information help you consume more goat meat	Yes	120	60
	No	19	9.5
	Maybe	61	30.5

Table 4: *Chi-square* test of independence results at a 5% significance level

Variable 1	Variable 2	p-value
Gender (male, female, prefer not to say)	Attitude/views (very positive, positive, negative, very negative)	0.00
Household size (1, 2, 3 and above)	Preferred type (live goat, whole slaughtered goat, small portions)	0.262
Religion (Christian, African Traditional, Atheist)	Attitude/views (very positive, positive, negative, very negative)	0.142
Age (18-25, 26-30, above 30)	Attitude/views (very positive, positive, negative, very negative)	0.001
Nationality (South African, non-South African)	Attitude/views (very positive, positive, negative, very negative)	0.027
Ethnicity (Xhosa, Zulu, Hlubi, Nguni, Tsonga, Shona, Ndebele, Other (ethnic groups from Ghana and Nigeria)	Attitude/views (very positive, positive, negative, very negative)	0.041

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