Acta Alimentaria 54 (2025) 4, 671–684
DOI: 10.1556/066.2025.00190

1828
AKADÉMIAI KIADÓ

Game meat purchasing frequency and its influencing factors among Hungarian consumers based on a representative study

A. Gyurcsó[1], G. Kasza[2,3], D. Szakos[2*], M. Máté[1,3] and L. Ózsvári[1,3]

[1] Department of Veterinary Forensics and Economics, University of Veterinary Medicine Budapest, 1078 Budapest, István street 2., Hungary

[2] Department of Applied Food Science, Institute of Food Chain Science, University of Veterinary Medicine Budapest, 1078 Budapest, István street 2., Hungary

[3] National Laboratory of Infectious Animal Diseases, Antimicrobial Resistance, Veterinary Public Health and Food Chain Safety, University of Veterinary Medicine Budapest, 1078 Budapest, István street 2., Hungary

ORIGINAL RESEARCH PAPER

Received: July 10, 2025 • Accepted: October 15, 2025
Published online: November 11, 2025

ABSTRACT

This study explores consumer behaviour toward game meat in Hungary, a country with a longstanding tradition of wild game management and hunting. Despite this cultural heritage, interest in game meat remains relatively modest within Hungarian society. The findings indicate that men, rural residents, and higher-income individuals are more likely to consume game meat, which is generally perceived as an expensive and unfamiliar food, particularly by urban residents, women, and those with limited access to venison. Many consumers obtain game meat through informal channels, such as receiving it from family members or friends who are hunters. Regular grocery shoppers prefer frozen, ready-to-eat game products, while respondents from rural communities and small towns more often obtain fresh meat directly. Preferences for locally sourced game meat are more prevalent among environmentally conscious consumers and older individuals. Expanding retail availability, especially in urban supermarkets and hypermarkets, alongside targeted educational initiatives, could broaden the consumer base. Educational initiatives emphasising the ecological importance of hunting and the sustainability and nutritional value of game meat

* Corresponding author. Tel.: +36 30 618 85 30. E-mail: szakos.david@univet.hu

may be particularly effective in engaging younger and urban populations. The results hold practical relevance for various stakeholders. Given similarities in consumption patterns, these insights may be applicable in other Central European countries and possibly offer valuable lessons for other regions.

KEYWORDS

game meat, consumer behaviour, sustainable food, food distribution, rural consumption, meat preferences

1. INTRODUCTION

Since the early 1960s global population rose from 3 to 8 billion, while the average meat consumption per capita increased from 23.1 to 44.5 kg year^{-1} (Sans and Combris, 2015; Food and Agriculture Organization of the United Nations [FAO], 2025). The global meat production is estimated to be 374 million tonnes in 2024, 5.2-fold increase from the 71 million tonnes in 1961 (FAO, 2024). Compared to these quantities, the total global game meat production reached only 2.05 million tonnes in 2023, accounting for about 0.5% of total meat production. During this period, venison production increased 2.4-fold compared to 1961, when venison production was about 0.85 million tonnes. In the EU, an increasing trend in game meat production was also observed since 1961, peaking between 1995 and 1999, when quantities ranging from 165 to 172 thousand tonnes. Following this period, the average production dropped to 110 thousand tonnes (FAO, 2025).

Game meat offers several nutritional and sensory benefits that may appeal to consumers (De Castro Cardoso Pereira and Dos Reis Baltazar Vicente, 2013; Kiss et al., 2020; Branciari and Ranucci, 2022). Evidence suggests that consumer risk perception and consumer concerns must be addressed to avoid the spreading of food safety misconceptions (Kasza et al., 2022; Veflen and Teixeira, 2022; da Cunha, 2025). Meat, especially game meat, is often perceived as a high-risk product in terms of food safety. Therefore, ensuring and communicating food safety is key to build consumer trust (Branciari and Ranucci, 2022; Posgay et al., 2022). Niewiadomska et al. (2021) found that fear of parasites and zoonotic diseases is common, but most infections can be prevented with proper cooking. Lead ammunition might lead to unwanted lead exposure to game consumers (Lehel et al., 2016; Niewiadomska et al., 2020; Branciari and Ranucci, 2022). The hunting conditions influence meat safety, particularly storage conditions before processing, environmental temperature and time between shooting and evisceration (Branciari and Ranucci, 2022). Post-harvest handling determines game meat safety along with species type, diet, and harvesting conditions (Niewiadomska et al., 2020). Game animals are free roaming, making them less likely to be exposed to pesticides than farmed animals (Hoffman, 2007). Consumers perceive game meat as free of hormones and antibiotics, making it a natural and nutritious alternative to domesticated animal products (Waba and Saidu, 2020; Jama'a et al., 2022). Education could help increasing consumer confidence in the safety and benefits of game meat further (Niewiadomska et al., 2021).

Game meat consumption is influenced by cultural, economic, and social factors (Tomasevic et al., 2018). There is well-functioning game meat market in the European Union (European Commission, 2014), however, the consumption is low (Niewiadomska et al., 2020; Czarniecka-

Skubina et al., 2022). In European countries, game meat is typically considered a specialty item. The proportion of regular consumers is low, only 2–4% of the population, and consumption per capita is between 0.2 and 1.1 kg a year (Andreotti et al., 2016; Czarniecka-Skubina et al., 2022). Trading of hunted game meat is limited due to competition from industrialised animal husbandry and also farmed venison (e.g., from New Zealand), logistical gaps in domestic supply chains (Gyurcsó et al., 2022), and import restrictions (Hoffman, 2007). Consumers in Western European countries are reluctant to change their traditional meat consumption habits (Niewiadomska et al., 2020). Southern and Eastern European countries consume more game meat than Central European ones (Tomasevic et al., 2018).

Data from Hungary is limited, but indicate that people consume between 0.3 and 0.4 kg of game meat per annum, much lower than other European countries. The majority of game meat produced in Hungary is exported mainly to Western Europe rather than consumed domestically (Gyurcsó et al., 2023). Game meat is not a regular part of the average Hungarian diet and is primarily consumed by hunters and their families. Wild boar is the most commonly consumed species, followed by roe deer and red deer (Gyurcsó et al., 2023). Reports from other countries also reflect that game meat is a niche product, with low regular consumption outside hunting communities (Hoffman, 2007; Niewiadomska et al., 2021; Branciari and Ranucci, 2022). Rather than being a part of the daily diet for most consumers, it is eaten mainly at special occasions or when obtained from hunting or specialty stores (Czarniecka-Skubina et al., 2022). Still, game meat can be positioned as a premium product, with limited but growing market potential (Mesinger and Ocieczek, 2021). Men and older individuals are more likely to consume game meat, while younger people and women consume it less frequently (Tomasevic et al., 2018; Niewiadomska et al., 2021), associating it with special meals rather than regular nutrition (Niewiadomska et al., 2021). Demand for game meat is highly seasonal, peaking in winter and during hunting seasons (Hoffman, 2007; Tomasevic et al., 2018; Mesinger and Ocieczek, 2021; Niewiadomska et al., 2021; Corradini et al., 2022).

In Hungary, the total sales of venison showed an increase between 2006 and 2016, while most of the products were still exported (Komarek and Tóth, 2018). In 2019 the demand declined due to the COVID-19 pandemic and the related restrictions but it has been growing again since then (NCA, 2023). The primary reason for the low domestic consumption of venison is the greater and convenient availability of other meat types, such as poultry and pork (NCA, 2023). According to a 2021 consumer survey conducted by IPSOS, wild boar was the most preferred type of game meat in Hungary, followed by deer and pheasant, while roe deer, rabbit, and wild duck were less frequently chosen. The report further highlights that educating young adults is crucial to increasing wild meat consumption, particularly by raising awareness of legal sources of supply and improving knowledge of cooking techniques (NCA, 2023).

The aim of this study was to investigate the prevalence and determinants of wild game meat consumption and purchasing behaviour, with a focus on demographic, economic, and geographical differences (age group, gender, type of residence, income level, frequency of food purchase) in Hungary. Respondents' perceptions of game meat prices and their socio-demographic differences are presented in the Supplementary Table 1.

2. MATERIALS AND METHODS

2.1. Data collection and sample

A quantitative survey approach was applied to analyse the frequency and conditions of game meat consumption in Hungary. The study was conducted in accordance with ethical guidelines and approved by the Scientific Research Committee of the University of Veterinary Medicine, Budapest, following the European General Data Protection Regulation (GDPR). A subcontractor was invited to support the fieldwork, while the authors contributed to all parts of the data collection process, from designing the questionnaire to each step of implementing and supervising the data collection (training interviewers, participating in data collection in person, and answering questions that arose during the process), as well as data recording and curation. The research collected data from 1,002 adult participants using quotas to ensure a sample distribution representative to the population of Hungary by age groups, genders, and geographical regions (NUTS-2) (Table 1) (HCSO, 2016). Data collection took place through personal interviews at crowded public places of cities of different sizes, where locals and commuters (including inhabitants of villages and other settlements) could be also reached. An interview typically lasted 15–18 min. Before the participation, respondents were informed about the study's purpose, the main terms (e.g., game meat and its types), data management, conditions, and opting out of participation and anonymity assurances. Only those who consented were invited to answer the questions.

The survey consisted of structured questions about the frequency of game meat consumption, forms of game meat purchased (fresh, frozen, processed, ready-to-eat), sources of procurement (butcher shops, supermarkets, hunters, online stores), attitudes towards game meat, including price perception, environmental considerations, and demographic characteristics (age, gender, income, education, place of residence). During the research design, in addition to general socio-demographic characteristics, we sought to gather data on specific factors that

Table 1. Representative socio-demographic characteristics of the sample (% of respondents, $n = 1{,}002$)

Socio-demographic categories		Sample	Population*
Sex	Female	52.8	53.1
	Male	47.2	46.9
Age	18–29	17.7	17.6
	30–39	16.7	17.0
	40–59	34.3	33.8
	>60	31.3	31.5
Geographical distribution (NUTS-2)	Central Hungary	30.7	30.8
	Central Transdanubia	10.9	10.8
	Western Transdanubia	10.0	10.0
	Southern Transdanubia	9.2	9.1
	Northern Hungary	11.5	11.6
	Northern Great Plain	15.0	14.9
	Southern Great Plain	12.8	12.8

*Latest census data from the Hungarian Central Statistical Office on the adult population of Hungary (HCSO, 2016)

may directly influence food consumption (Table 2). In most cases we preferred closed-ended questions, using categories and Likert-scales in favour of statistical robustness.

The processing of the paper-based questionnaires was assisted with a coding table enabling a coherent data sheet recorded in Microsoft Excel®. After data cleaning the final database counted 1,002 questionnaires.

Table 2. Additional socio-demographic characteristics of the sample (valid percentage of respondents)

Socio-demographic categories		%
Place of living	Capital	26.6
	City	58.8
	Village	14.7
Highest accomplished qualification	Primary and vocational school	11.3
	High school (graduated)	38.9
	Higher education	49.7
Number of people living in the household	1	24.7
	2	34.3
	3	18.1
	4	14.2
	5 or more	9.0
Children under 15 years of age in the household	Yes	19.2
	No	80.8
Level of income	Below average	16.0
	Average	63.7
	Above average	20.3
Cooking frequency	Daily	22.9
	Several times a week	50.4
	A few times a month	12.7
	Less frequently	9.3
	Practically never	4.7
Food purchasing frequency	Daily	19.2
	Several times a week	63.9
	A few times a month	13.2
	Less frequently	3.1
	Practically never	0.6
Importance of environmental protection	Very important, actively engaged	61.8
	Important, but not always attentive	34.6
	Somewhat mindful, but not a priority	3.2
	Not important at all	0.3
Pet/livestock ownership	Pet	41.9
	Livestock	2.1
	Both	7.2
	Neither	48.8
Interest in dealing with animals	Really enjoy	51.2
	Occasionally enjoy	31.1
	Only if necessary	11.5
	Do not like	6.1

2.2. Statistical analysis

The data was analysed by using IBM SPSS Statistics 26.0 (IBM Corp., 2019). Descriptive statistics were applied to summarise the prevalence and frequency of game meat consumption. To examine associations between categorical variables (e.g., gender, age group, type or residence, level of income, and food purchasing frequency), the original frequency tables were converted into two-dimensional cross tables. The stochastic association between variables in the contingency tables was tested using Pearson's chi-square test (χ^2). A significance level of $P < 0.05$ was applied in all statistical tests to ensure robustness in identifying differences across consumer groups.

3. RESULTS AND DISCUSSION

3.1. Frequency of game meat purchase for cooking purposes

Out of the 1,002 respondents, 60% ($n = 601$) reported that they never purchase game meat for cooking purposes, while 40% ($n = 401$) answered "yes" to this question. Among these respondents specified how often they buy or acquire game meat. Three-quarters of these consumers reported purchasing game meat 1–5 times per year, with the most common responses being once ($n = 65$, 23.6%), twice ($n = 69$, 25.1%), and three times ($n = 34$, 12.4%).

According to the literature, many consumers refrain from buying game meat simply because they are unfamiliar with it or unsure how to prepare it (Hoffman, 2007). Among those who do purchase it, most do so only 1–5 times per year, which is in line with findings from other studies reporting that consumers tend to eat game meat occasionally or on special occasions only (Corradini et al., 2022). In Poland, 74% of consumers eat game meat less than once a month, while only 7% consume it multiple times per week (Niewiadomska et al., 2020).

3.2. Forms of game meat products acquired

Nearly half of the respondents (48.6%; $n = 487$) stated that they do not purchase or acquire game meat, while 51.4% ($n = 515$) reported doing so. Most consumers obtained game meat in the form of fresh, frozen, or processed products such as ham, sausage, or salami. These product forms were acquired both through formal channels, such as butcher shops and markets, and through informal means, including gifts from hunters or friends. Socio-demographical differences are shown in Table 3.

Certain demographic variables showed significant effects on purchasing behaviour. Significantly, more women reported not purchasing or acquiring game meat compared to men. Accordingly, men were more likely to purchase fresh, frozen, or processed game meat products than women. A gender difference similar to our findings was also observed by Czarniecka-Skubina et al. (2022) in Poland, where men were more likely to purchase game meat. This difference can be explained by several factors. Meat consumption, particularly red meat and game, has often been culturally associated with masculinity, symbolising strength and virility, which may encourage men to consume these products more frequently (Kubberød et al., 2002). Women, on the other hand, are more likely to express health, ethical, and environmental concerns regarding meat consumption, which has been linked to a higher tendency to reduce or avoid meat intake (Sanchez-Sabate and Sabaté, 2019; Rosenfeld and Tomiyama, 2021).

Table 3. Frequency of game meat product forms, considering differences between gender, age groups, place of residence, level of income, and food purchasing frequency (%) (n = 1,002)

Socio-demographic characteristics		Do not purchase/ acquire game meat	Fresh game meat	Frozen game meat	Processed game meat products (ham, sausage, salami)	Frozen ready-to-eat game products
Total sample (%)		48.6	35.0	21.0	20.4	1.4
Gender	Female	55.8	28.4	18.5	16.6	0.8
	Male	40.6	42.5	23.7	24.5	2.1
	χ^2	23.016	21.936	4.003	9.585	3.343
	Sig.	*<0.0001*	*<0.0001*	*<0.05*	*<0.01*	0.067
Age group (years old)	18–29	56.5	36.2	19.2	20.3	1.7
	30–39	51.5	36.5	20.4	21.6	1.2
	40–59	45.3	35.5	21.5	22.4	1.7
	≥60	46.2	33.1	21.7	17.5	1.0
	χ^2	7.173	0.795	0.519	2.583	0.908
	Sig.	0.067	0.851	0.915	0.460	0.824
Type of residence	Capital City	55.6	28.0	21.1	18.8	0.8
	Village	47.0	36.7	21.8	20.6	1.6
		41.7	41.0	18.8	22.9	1.4
	χ^2	8.437	8.694	0.660	0.999	0.872
	Sig.	*<0.05*	*<0.05*	0.719	0.607	0.647
Level of income	Below average	54.1	26.1	17.2	14	1.9
	Average	46.4	36.8	22.6	22.6	1.1
	Above average	50.5	37.5	19	19.5	2
	χ^2	3.415	6.879	2.872	5.913	1.161
	Sig.	0.181	*<0.05*	0.238	0.052	0.56
Food purchasing frequency	Daily	40.3	42.4	26.7	19.9	2.1
	Several times a week	50.7	33.2	20.0	21.3	1.1
	A few times a month	51.9	32.8	18.3	17.6	1.5
	Less frequently	51.6	45.2	16.1	16.1	0.0
	Practically never	0.0	33.3	16.7	50.0	16.7
	χ^2	12.74	12.74	7.099	5.214	4.527
	Sig.	*<0.05*	*<0.05*	0.131	0.266	0.339

Significant results (where the P-value was equal to or below 0.05) are indicated in italics to aid the reader.

In addition, women generally display greater sensitivity to food safety and perceived health risks, which can also reduce their willingness to purchase wild game products (Tomasevic et al., 2018).

Although no statistically significant differences were found between age groups regarding game meat purchases, respondents aged 18–29 reported the lowest purchasing rates, while older age groups tended to buy game meat more frequently. Similarly to the present results, Czarniecka-Skubina et al. (2022) found that in Poland, older individuals (especially those over 51) were more likely to consume game meat, while younger individuals (18–30) are more likely to avoid it.

However, respondents from the capital city were less likely to buy game meat than those living in smaller cities or rural areas. Residents of these smaller settlements more frequently acquired fresh game meat, as reported by Jama'a et al. (2022), possibly due to differences in availability and cultural practices (Chaves et al., 2021).

Purchasing fresh game meat was positively associated with higher income levels. In terms of frozen game meat, individuals with a university or college degree were more likely to buy such products than those with only primary, vocational, or secondary education. Furthermore, households with children under the age of 15 were more likely to acquire fresh game meat compared to households without children, suggesting that family-oriented meal planning may influence such decisions (Merlino et al., 2017). Convenience is another key factor: earlier studies showed that many consumers perceive game meat as difficult to prepare (Niewiadomska et al., 2020; Waba and Saidu, 2020). Food safety concerns and inconsistent meat processing standards remain barriers to broader consumption (Corradini et al., 2022).

Respondents who shopped for food daily were overall less likely to acquire game meat compared to those shopping several times a week or only a few times per month. However, among daily shoppers, a higher proportion purchased frozen ready-to-eat products, suggesting a preference for convenience. Our findings suggest that game meat remains a niche product, catering primarily to a small and exclusive consumer segment, as also observed by Corradini et al. (2022).

3.3. Sources of game meat purchases

The most common sources of game meat were gifts from hunters or direct acquisition through hunting, including personal hunting. Butcher shops also represented a frequent point of purchase. Significantly more men received game meat from hunters or were hunters themselves. Men also more frequently obtained game meat from butcher shops, hypermarkets, and markets than women. The socio-demographic differences are presented in Table 4.

Previous studies have similarly highlighted that non-hunting consumers often receive game meat as gifts or acquire it directly from hunters (Corradini et al., 2022), while butcher shops remain common retail sources (Hoffman et al., 2005). In Poland, many game meat consumers are hunters themselves (Czarniecka-Skubina et al., 2022). Restaurants also play a key role in the distribution of game meat, particularly for non-hunters who primarily consume it in such settings (Niewiadomska et al., 2021). Tomasevic et al. (2018) reported that 44.1% of respondents from 10 European countries purchase game meat from hunters, while 22.9% consume it exclusively in restaurants and only 7.3% purchase it from supermarkets (Tomasevic et al., 2018). According to Ferri et al. (2017), in Italy, game meat obtained through hunting is typically consumed with family (60%) and friends (83%). Moreover, about 3% of the registered population are hunters, who regularly consume game meat (Ferri et al., 2017). A similar trend is seen in Spain, where game meat is mostly self-consumed or shared within the hunting community, with only 2.1% of hunters selling venison to others (Lizana et al., 2022).

Table 4. Frequency of game meat procurement sources considering differences between gender, age groups, place of residence, level of income, and food purchasing frequency (%) (n = 573)

Socio-demographic characteristics		Receive as a gift	Directly from a hunter/I am a hunter	Butcher shop	Hypermarket, supermarket, discount store	Market	Online store
Total sample (%)		29.7	21.0	16.4	11.9	11.8	0.3
Gender	Female	27.6	17.2	11.9	8.9	9.1	0.2
	Male	32.1	25.2	21.4	15.2	14.8	0.4
	χ^2	2.459	9.542	16.27	9.583	7.879	0.457
	Sig.	0.117	*<0.01*	*<0.0001*	*<0.01*	*<0.01*	0.499
Age group (years old)	18–29	27.7	26.0	16.4	9.6	12.4	0.0
	30–39	27.5	24.6	21.0	11.4	16.8	0.0
	40–59	29.1	24.4	16.3	12.2	10.8	0.6
	≥60	32.8	12.4	14.0	13.1	9.9	0.3
	χ^2	2.227	20.309	3.845	1.368	5.515	1.953
	Sig.	0.527	*<0.0001*	0.279	0.713	0.138	0.582
Type of residence	Capital City	25.7	15.3	12.6	13.0	11.9	0.0
	Village	30.0	21.3	18.9	12.0	13.3	0.5
	χ^2	37.5	29.2	14.6	9.7	6.9	0.0
	Sig.	6.192	10.928	5.561	0.968	4.472	2.112
Level of income	Below average	*<0.05*	*<0.01*	0.062	0.616	0.107	0.348
	Average	29.3	12.7	10.2	7.6	7.0	0.0
	Above average	30.6	20.9	18.3	13.9	13.2	0.5
	χ^2	28.0	28.0	15.5	9.5	12.0	0.0
	Sig.	0.527	12.353	6.234	6.098	4.62	1.713
Food purchasing frequency	Daily	0.768	*<0.01*	*<0.05*	*<0.05*	0.099	0.425
	Several times a week	35.6	24.6	19.9	14.7	18.3	1.0
	A few times a month	27.6	21.4	15.7	11.2	11.0	0.2
	Less frequently	26.7	14.5	17.6	11.5	7.6	0.0
	Practically never	45.2	22.6	6.5	3.2	9.7	0.0
	χ^2	33.3	0.0	0.0	50.0	0.0	0.0
	Sig.	8.74	6.532	5.442	12.283	11.24	4.47
		0.068	0.163	0.245	*<0.05*	*<0.05*	0.35

Significant results (where the *P*-value was equal to or below 0.05) are indicated in italics to aid the reader.

In the present study, younger respondents were more likely than older individuals to obtain game meat directly from hunters. However, a previous Hungarian consumer survey found that most game meat consumers belonged to the middle-aged or older age groups, often receiving

meat through hunter acquaintances and frequently lacking the culinary knowledge to prepare it properly (NCA, 2023).

Income level also influenced sourcing patterns. Respondents with above-average income were significantly more likely to receive game meat from hunters or to be hunters themselves. Meanwhile, those with average income were more likely to buy game meat from butcher shops or hypermarkets. Similarly, individuals with a university or college degree were more inclined to purchase game meat from hypermarkets, supermarkets, or discount stores than those with lower educational attainment. This aligns with findings from Poland, where higher education levels were associated with greater game meat consumption (Czarniecka-Skubina et al., 2022).

Households with children under 15 years were more likely to purchase game meat from markets or online sources compared to those without children. Among those who shopped for groceries daily, fewer respondents reported not purchasing game meat than those who shopped less frequently. Interestingly, daily shoppers were also significantly more likely to buy game meat from hypermarkets or markets. Moreover, individuals who acquired game meat from markets tended to cook more frequently, daily or several times a week, than those who cooked less often or not at all. As Fantechi et al. (2022) pointed out, past behaviour plays a critical role in shaping sourcing decisions. Consumers who are used to obtaining meat directly from hunters are less likely to rely on formal distribution channels.

4. CONCLUSIONS

This study provided a fresh outlook on consumer behaviour about game products from a Central European country with a long wild game management and hunting tradition. The interest about game meat products in the Hungarian society remains modest. Besides hunters, mostly men living in rural areas and individuals who earn more show higher attraction to game meat products. Game meat is perceived as an expensive and not too familiar food choice especially for women who live in cities and for people who do not have easy access to game meat. Regular grocery shoppers tend to choose frozen ready-to-eat game products, while people linked to agriculture usually obtain fresh game meat.

The distribution of game meat through social contacts (friends, family) is very much maintained by hunters. Older individuals, however, tend to decrease their dependency on these direct sources. Consumers who prefer locally sourced game meat belong either to older age groups or place high importance on environmental protection.

The relatively narrow actual consumer base may improve through awareness raising initiatives and wider distribution networks of game meat products, especially in cities. Expanding retail options in hypermarkets and supermarkets could improve consumer exposure (Gyurcsó et al., 2023), while the role of education is also important to increase the acceptance of game products (Hoffman, 2007; Mesinger and Ocieczek, 2021; Corradini et al., 2022). Especially, education about the ecological importance of hunting, and game meat as a local, sustainable protein source with high nutritional value could influence younger consumers in addition to urban residents who might have limited knowledge and experience with game products. These aspects could counterbalance, at least in part, the higher price of venison products. Low level familiarity with game meat processing could be overcame by utilising temporary incentives for involving new consumers.

These experiences could be especially relevant for wild game management specialists, venison processing companies, retailers, and hunting associations to develop or optimise their strategies based on fresh consumer-insights. Experts from the area of nutrition and sustainable food consumption could also find the outcomes of the investigation to be inspirational to extend their activities to a new area by identifying venison as a nutritious and sustainable protein source.

Considering that previous research and regional observations suggest similarities in venison consumption patterns across several Central European countries, the results of this study may offer insights that are not only relevant for Hungary but potentially applicable to neighbouring countries in the region. While national contexts vary, common socio-demographic factors and consumer behaviours could make the findings useful for experts and stakeholders beyond Hungary, and may also serve as a reference point for other geographical areas with comparable characteristics.

ACKNOWLEDGEMENTS

This research was supported by Project No. RRF-2.3.1-21-2022-00001, which has been implemented with the support provided by the Recovery and Resilience Facility (RRF), financed under the National Recovery Fund budget estimate, RRF-2.3.1-21 funding scheme.

SUPPLEMENTARY MATERIAL

Supplementary data to this article can be found online at https://doi.org/10.1556/066.2025.00190.

REFERENCES

Andreotti, A., Borghesi, F., and Aradis, A. (2016). Lead ammunition residues in the meat of hunted woodcock: a potential health risk to consumers. *Italian Journal of Animal Science*, 15(1): 22–29, https://doi.org/10.1080/1828051X.2016.1142360

Branciari, R. and Ranucci, D. (2022). Editorial for the special issue: game meat and game meat products: safety, quality, and consumer perception. *Foods*, 11(14): 2073, https://doi.org/10.3390/foods11142073

Chaves, W.A., Valle, D., Tavares, A.S., Morcatty, T.Q., and Wilcove, D.S. (2021). Impacts of rural to urban migration, urbanization, and generational change on consumption of wild animals in the Amazon. *Conservation Biology*, 35(4): 1186–1197, https://doi.org/10.1111/cobi.13663

Corradini, A., Marescotti, M.E., Demartini, E., and Gaviglio, A. (2022). Consumers' perceptions and attitudes toward hunted wild game meat in the modern world: a literature review. *Meat Science*, 194: 108955, https://doi.org/10.1016/j.meatsci.2022.108955

Czarniecka-Skubina, E., Stasiak, D.M., Latoch, A., Owczarek, T., and Hamulka, J. (2022). Consumers' perception and preference for the consumption of wild game meat among adults in Poland. *Foods*, 11(6): 830, https://doi.org/10.3390/foods11060830

Da Cunha, D.T. (2025). Risk perception, communication and behaviour towards food safety issues. *Foods*, 14(2): 322, https://doi.org/10.3390/foods14020322

De Castro Cardoso Pereira, P.M. and Dos Reis Baltazar Vicente, A.F. (2013). Meat nutritional composition and nutritive role in the human diet. *Meat Science*, 93(3): 586–592, https://doi.org/10.1016/j.meatsci.2012.09.018

EC (2014). *Study report part B – minor meats. September 2014*. LEI Wageningen UR. European Commission Directorate General for Agriculture and Rural Development, Available at: https://agriculture.ec.europa.eu/document/download/1fbadada-de37-482b-adb9-9aceaef9fd7f_en?filename=ext-study-milk-meat-origin-fulltext_meat_2014_en.pdf (Accessed 13 February 2025).

Fantechi, T., Contini, C., Scozzafava, G., and Casini, L. (2022). Consumer preferences for wild game meat: evidence from a hybrid choice model on wild boar meat in Italy. *Agricultural and Food Economics*, 10(1): 23, https://doi.org/10.1186/s40100-022-00231-w

Ferri, M., Baldi, L., Cavallo, S., Pellicanó, R., and Brambilla, G. (2017). Wild game consumption habits among Italian shooters: relevance for intakes of cadmium, perfluorooctanesulfonic acid, and ^{137}Cesium as priority contaminants. *Food Additives & Contaminants: Part A*, 34(5): 832–841, https://doi.org/10.1080/19440049.2017.1293303

FAO (2024). *Meat market review: emerging trends and outlook in 2024*. Food and Agriculture Organization of the United Nations, Rome, Available at: https://openknowledge.fao.org/server/api/core/bitstreams/0d3971d1-2fba-4381-8bac-b3a251ee716a/content (Accessed: 13 February 2025).

FAO (2025). *FAOSTAT. Production. Crops and livestock products*. Food and Agriculture Organization of the United Nations, Available at: https://www.fao.org/faostat/en/#data/QCL (Accessed 13 February 2025).

Gyurcsó, A., Kasza, G., and Ózsvári, L. (2022). A vadhús közfogyasztásának története és élelmiszerlánc-biztonsági előírásai Magyarországon. (History and food-chain safety provisions of the public consumption of game meat in Hungary) (in Hungarian with English abstract). *Magyar Állatorvosok Lapja*, 144(10): 623–639, https://doi.org/10.56385/magyallorv.2022.10.623-639

Gyurcsó, A., Kasza, G., and Ózsvári, L. (2023). Az illegális vadászat elleni jogi szabályozás és a vadvédelem története Magyarországon: Irodalmi áttekintés esettanulmányokkal. (The history of legal regulation against illegal hunting in Hungary. Literature review with case studies (in Hungarian with English abstract). *Magyar Állatorvosok Lapja*, 145(5): 297–308, https://doi.org/10.56385/magyallorv.2023.05.297-308

Hoffman, L.C. (2007). *The meat we eat: are you game?* University of Stellenbosch, Stellenbosch, Available at: https://scholar.sun.ac.za/server/api/core/bitstreams/18504ee6-32fa-42b7-bd34-1b978147f257/content (Accessed 12 March 2025).

Hoffman, L.C., Muller, M., Schutte, D.W., Calitz, F.J., and Crafford, K. (2005). Consumer expectations, perceptions and purchasing of South African game meat. *South African Journal of Wildlife Research*, 35(1): 33–42, https://hdl.handle.net/10520/EJC117207.

HCSO (2016). *Mikrocenzus 2016 – 3. Demográfiai adatok. (Hungarian census data 2016)*. Központi Statisztikai Hivatal [KSH]. (Hungarian Central Statistical Office HCSO), Available at: https://www.ksh.hu/mikrocenzus2016/kotet_3_demografiai_adatok (Accessed 12 March 2025).

IBM Corp (2019). *IBM SPSS statistics for windows*, Version 26.0. IBM Corp, Armonk, NY, Available at: https://www.ibm.com/products/spss-statistics (Accessed 9 June 2023).

Jama'a, N.A., Jamilu, H., Misau, A.B., Buhari, S., and Sani, A. (2022). Game meats, a heart-healthy choice: its contributions in reducing animal protein malnutrition: review. *Nigerian Journal of Animal Production*, 1725–1728.

Kasza, G., Csenki, E., Szakos, D., and Izsó, T. (2022). The evolution of food safety risk communication: models and trends in the past and the future. *Food Control*, 138: 109025, https://doi.org/10.1016/j.foodcont.2022.109025

Kiss, A., Pfeiffer, L., Popp, J., Oláh, J., and Lakner, Z. (2020). A blind man leads a blind man? Personalised nutrition-related attitudes, knowledge and behaviours of fitness trainers in Hungary. *Nutrients*, 12(3): 663, https://doi.org/10.3390/nu12030663

Komarek, L. and Tóth, Sz. (2018). A magyar vadhúsértékesítés alakulásának főbb tendenciái és lehetséges fejlődési irányai. (Main trends in Hungarian game meat sales and possible development directions) (in Hungarian). *Jelenkori társadalmi és gazdasági folyamatok*, 13(3–4): 43–58, https://doi.org/10.14232/jtgf.2018.3-4.43-58

Kubberød, E., Ueland, Ø., Tronstad, Å., and Risvik, E. (2002). Attitudes towards meat and meat-eating among adolescents in Norway: a qualitative study. *Appetite*, 38(1): 53–62, https://doi.org/10.1006/appe.2002.0458

Lizana, V., Muniesa, A., Cardells, J., López-Ramon, J., Aguiló-Gisbert, J., Lomillos, J.M., and Gortázar, C. (2022). Safe game: hygienic habits in self-consumption of game meat in eastern Spain. *Foods*, 11(3): 368, https://doi.org/10.3390/foods11030368

Lehel, J., Laczay, P., Gyurcsó, A., Jánoska, F., Majoros, S., Lányi, K., and Marosán, M. (2016). Toxic heavy metals in the muscle of roe deer (*Capreolus capreolus*): food toxicological significance. *Environmental Science and Pollution Research*, 23: 4465–4472, https://doi.org/10.1007/s11356-015-5658-1

Merlino, V.M., Borra, D., Verduna, T., and Massaglia, S. (2017). Household behavior with respect to meat consumption: differences between households with and without children. *Veterinary Sciences*, 4(4): 53, https://doi.org/10.3390/vetsci4040053

Mesinger, D. and Ocieczek, A. (2021). Risk assessment of wild game meat intake in the context of the prospective development of the venison market in Poland. *Polish Journal of Environmental Studies*, 30(2): 1307–1315, https://doi.org/10.15244/pjoes/124744

National Chamber of Agriculture [NCA], (Nemzeti Agrárgazdasági Kamara [NAK]) (2023). *Mezőgazdasági Kézikönyv 9. A magyar vadhús piaci lehetőségei és a vadhúsfogyasztási szokások Magyarországon (The market possibilities of Hungarian game meat and the game meat consumption habits in Hungary)*, (In Hungarian), pp. 51, Available at: https://www.magyarvadasz.hu/images/cms/File/hirek/magyar_vadhus.pdf (Accessed 13 December 2024).

Niewiadomska, K., Kosicka-Gębska, M., Gębski, J., Jeżewska-Zychowicz, M., and Sułek, M. (2020). Game meat consumption—conscious choice or just a game? *Foods*, 9(10): 1357, https://doi.org/10.3390/foods9101357

Niewiadomska, K., Kosicka-Gębska, M., Gębski, J., Jeżewska-Zychowicz, M., and Sułek, M. (2021). Perception of the health threats related to the consumption of wild animal meat—is eating game risky? *Foods*, 10(7): 1544, https://doi.org/10.3390/foods10071544

Posgay, M., Greff, B., Kapcsándi, V., and Lakatos, E. (2022). Effect of *Thymus vulgaris* L. essential oil and thymol on the microbiological properties of meat and meat products: a review. *Heliyon*, 8(10): e10812, https://doi.org/10.1016/j.heliyon.2022.e10812

Rosenfeld, D.L. and Tomiyama, A.J. (2021). Gender differences in meat consumption and openness to vegetarianism. *Appetite*, 166: 105475, https://doi.org/10.1016/j.appet.2021.105475

Sanchez-Sabate, R. and Sabaté, J. (2019). Consumer attitudes towards environmental concerns of meat consumption: a systematic review. *International Journal of Environmental Research and Public Health*, 16(7): 1220, https://doi.org/10.3390/ijerph16071220

Sans, P. and Combris, P. (2015). World meat consumption patterns: an overview of the last 50 years (1961–2011). *Meat Science*, 109: 106–111, https://doi.org/10.1016/j.meatsci.2015.05.012

Tomasevic, I., Novakovic, S., Solowiej, B., Zdolec, N., Skunca, D., Krocko, M., Nedomova, S., Kolaj, R., Aleksiev, G., and Djekic, I. (2018). Consumers' perceptions, attitudes and perceived quality of game meat in ten European countries. *Meat Science*, 142: 5–13, https://doi.org/10.1016/j.meatsci.2018.03.016

Veflen, N. and Teixeira, P. (2022). Food safety myths and consequences for health: a study of reported gastroenteritis incidence and prevalence in the UK, Norway, and Germany. *Food Control*, 142: 109210, https://doi.org/10.1016/j.foodcont.2022.109210

Waba, Y.E. and Saidu, I. (2020). Nutrient composition and value of selected game meat: a review. In: *Nigerian Society for Animal Production (NSAP) 45th annual conference - Bauchi 2020 Book of proceedings*. pp. 864–867.