

Consumer preferences related to the purchase and meat consumption

Małgorzata Moskal, Grażyna Michalska

*UTP University of Science and Technology in Bydgoszcz, Department of Animal Science,
Animal Resource Assessment Laboratory, Mazowiecka 28, 85-084 Bydgoszcz, Poland*

Consumer preferences related to the purchase and consumption of meat products have been the subject of nutrition research for many years (Orłowska, 2005; Połom & Baryłko-Pikielna, 2004; Krelowska-Kułas, 2005). Different factors affect the choices made by consumers. In addition to religious traditions, the media exert an influence on the type of the diet that contains meat and its processed products through the promotion of healthy lifestyles and slim silhouettes. Historically speaking, the development of nutritional standards and recommendations in 1930 proved to be a nutritional breakthrough (Orłowska, 2005). They made it possible to eliminate diseases caused by nutrient deficiencies, such as rachitis, certain types of goiter and growth disorders in infants and children. As the nutritional sciences developed (Połom & Baryłko-Pikielna, 2004; Kozirok et al., 2012), the consumer awareness of the principles of rational nutrition increased and their preferences have changed drastically. The diet pyramid (Orłowska, 2005) was introduced into the preparation of menus, resulting in a decrease in the consumption of pork meat and an increase in the popularity of poultry meat (Knecht & Środoń, 2012).

Characteristics of meat and its products

Meat is an edible portion of wild and domestic animals, both these kept by humans and those living in the wild, which has long been an indispensable part of human diet. There are seven basic types of meat: pork – swine meat, beef – meat of adult bovine animals, poultry – meat of farm birds, mutton – adult sheep meat and goat meat, horse meat and venison – hunted game meat (Litwińczuk, 2012). As the technology

progressed, people ate meat in an increasingly processed form. Its main ingredients include a skeletal muscle tissue together with adjacent morphotic elements, such as connective tissue, fat tissue, blood vessels, blood and bones. Lean meat contains about 75% of water, 19% of proteins, 1–4% of fat (depending on the type of meat), approx. 1% of minerals and 1% of carbohydrates (Litwińczuk, 2012; Kumirska et al., 2010; Tereszkiwicz, 2017).

From the nutritional point of view, the most important meat ingredient is the complete protein (Michalska & Nowachowicz, 2009). Fat is an ingredient that has a significant influence on the aromatic and taste characteristics of meat but its excessively high content has an adverse effect on health (Świdorski, 2003). According to Michalska et al. (2013), it is important to consume lean meat because fat meat contains cholesterol and saturated fatty acids that cause an increase in blood lipids. Long-term consumption leads to an increased risk of myocardial infarction and is conducive to the development of atheromatosis.

In addition to meat, meat products, i.e. the products obtained as a result of processing meat, such as cured meat products and canned meat products, are a large part of the human diet. Cured meat products include smoked meat – smoked and cured products obtained from one or several pieces of meat, sausages – products made of crushed meat, spices, fat and additives in natural or artificial casings, offal sausages – products made of meat, fat and offal with or without blood in natural or artificial casings or moulds, block products – with partially or fully preserved tissue structure and spices, fat and offal in moulds or

artificial casings. On the other hand, canned food is a hermetically sealed product which has been subjected to thermal treatment. There are a few types of canned food of animal origin: canned fat, blocks, offal and meat as well as canned offal in sauce and pâté (Litwińczuk, 2012). They can be divided into the following groups according to the type of thermal treatment they are subjected to: kept in room temperature (non-refrigerated), pasteurized (requiring cold storage), heat treated at temperatures not higher than 100°C, sterilized (which may or may not require refrigeration) and heat treated above 100°C (Litwińczuk, 2012).

Since meat and its products have a significant share in the human diet, research has been conducted in the student environment to analyse the consumer preferences related to its purchase and consumption on the basis of surveys.

Materials and methods

The surveys were conducted in May and June 2015 among 50 Animal Husbandry students at the Animal Material Assessment Laboratory of the Faculty of Animal Breeding and Biology at the UTP University of Science and Technology in Bydgoszcz. The results were developed, taking into account the division of students into three age groups: 20–25, 26–30 and over 30. The students came from villages and towns with a diverse population, i.e. 10,000 inhabitants, from 10,000 to 50,000 inhabitants, from 50,000 to 100,000 inhabitants and more than 100,000 inhabitants. The survey questionnaire contained 47 questions, 5 of which were open-ended questions. The questions included in the survey concerned, among others, the criteria related to the choice of meat and its products, consumer and shopping habits and the concerns associated with it. It should be noted that the total amount of answers could exceed 100% as the respondents chose more than one answer to some of the questions. Only 1 of 50 respondents declared that they did not consume meat and the reason for abandoning meat consumption was the use of a vegetarian diet. Thus, 49 questionnaires qualified for further analysis. The results obtained after the survey were statistically analysed. Numbers and percentages were calculated using Microsoft Excel software.

Results and discussion

The majority of respondents were women (69.5%). The respondents in the 20–25 age group constituted the most frequently represented age group, which accounted for 75.0% of all respondents (Tab. 1). The largest number of people (30.6%) declared that they came from a three-person household. Three-quarters of the respondents reported a household income per capita at the level of the national average. The majority of the respondents were rural residents, who accounted for more than a half of all the respondents. One-quarter of the questionnaires were filled in by people living permanently in cities with a population exceeding 100,000 inhabitants.

The conducted surveys showed that poultry is the most commonly consumed meat (36.2% of all respondents), followed by the preference for pork (27.8%) (Tab. 2). A large portion of the respondents (25.1%) indicated a steady share of poultry, fish and pork in their diets. Like in the survey conducted by Biegański (2015), pork and poultry were the most popular choices among the respondents aged 20–25, and their consumption was preferred by 27.8% and 25.0% of students, respectively. Older respondents, aged 26–30 and over 30, declared primarily a varied diet consisting of poultry, fish and pork. Augustyńska-Prejsner et al. (2014) indicate that increased consumption of poultry is due to its affordable price, rich assortment, nutritional value and beneficial sensory properties and reduced calorie content. It should be noted that the poultry market is one of the fastest developing meat markets in the world, including in Poland (Konarska et al., 2015). According to Kukułowicz (2015) and Michalska et al. (2013), the consumption of fish by Poles is still too low. Fish is estimated to be eaten once a month although it is advisable to consume fish and fish products twice a week (Kukułowicz, 2015). Blicharski (2013) reports that Polish pork currently contains half as much fat as previously thought, has a more favourable fatty acid profile compared to beef, a more favourable omega-6 and omega-3 fatty acid ratio in relation to poultry, and its nutritional value and health benefits have improved considerably over the past 20 years.

Table 1. Characteristics of the respondents

Item		Number of people	%
Sex	female	34	69.5
	male	15	30.5
Age	20–25 years old	37	75.0
	26–30 years old	7	13.9
	over 30 years old	5	11.1
Number of people in the household	2 people	3	5.5
	3 people	15	30.6
	4 people	11	22.2
	5 people	10	19.5
	6 people	4	11.2
	7 people	3	5.5
	8 people	3	5.5
Income per person in the family	below average	7	13.9
	average	38	75.0
	above average	4	11.1
Place of residence	village	26	52.8
	town up to 10. thous. inhabitants	4	8.3
	town between 10 and 50 thous. inhabitants	1	2.8
	town with 50,000–100,000 inhabitants	4	11.1
	town over 100 thous. inhabitants	14.0	25.0

Table 2. Preferences of meat types according to age of respondents

Type of meat	Age groups (%)			
	20–25 years old	26–30 years old	over 30 years old	total
Pork	27.8	0.0	0.0	27.8
Poultry	25.0	5.6	2.8	36.2
Poultry, fish, pork	13.9	5.6	5.6	25.1
Poultry, fish, beef	0.0	2.8	0.0	2.8
Poultry, fish	2.7	0.0	2.7	5.4
Fish	2.7	0.0	0.0	2.7

The majority of respondents (55.2%) declared they consumed meat several times a week (Tab. 3). Significantly fewer respondents consumed meat once (19.6%), twice (14.0%) and several times (11.2%) per day.

The frequency of meat consumption varied slightly in different age groups. It should

be noted, though, that 11.2% of students aged 20–25 consumed meat several times a day, unlike their older colleagues. The results are consistent to a certain extent with the research by Kosicka-Gębska and Gębski (2013), where 43.9% of consumers ate meat several times a week and 27.2% ate it daily.

Table 3. Frequency of meat consumption

Frequency of meat consumption	Age (%)			
	20–25 years old	26–30 years old	over 30 years old	total
Several times a week	44.4	5.6	5.2	55.2
Once a day	11.2	2.8	5.6	19.6
Twice a day	8.4	2.8	2.8	14.0
Several times a day	11.2	0.0	0.0	11.2

The vast majority of the surveyed students (47.3%) purchased meat in supermarkets, which included the supermarkets with a surface area of no more than 2,500 m² and supermarkets with a surface area between 6,000 and 12,000 m², and 33.3% of respondents purchased meat in a butcher's shop (Fig. 1). Local shops, i.e. small shops with an area of no more than a few dozen square meters located in the neighbourhood of multi-family multi-storey buildings, were the least popular. A small number of students (5.5%) declared they purchased meat in various types of stores, i.e. in supermarkets, butchers' and local shops. Similar results for the purchase of meat

in large retail chains (43%) were obtained by Salejda et al. (2013). However, the research by Nowak and Trziszka (2010) shows that most of the respondents (31.0%) bought poultry in the butcher's or producer's outlet stores. 26.1% of the respondents declared that they made their purchases in small grocery and other stores, 23.3% bought this product in local grocery stores, and the smallest number of respondents, i.e. 21.3%, bought it in large and medium supermarkets. In the research by Kasprzak and Jaworska (2010), more than half (55%) of consumers purchased meat at a butcher's, 28% – on a farm and 17% – in a supermarket.

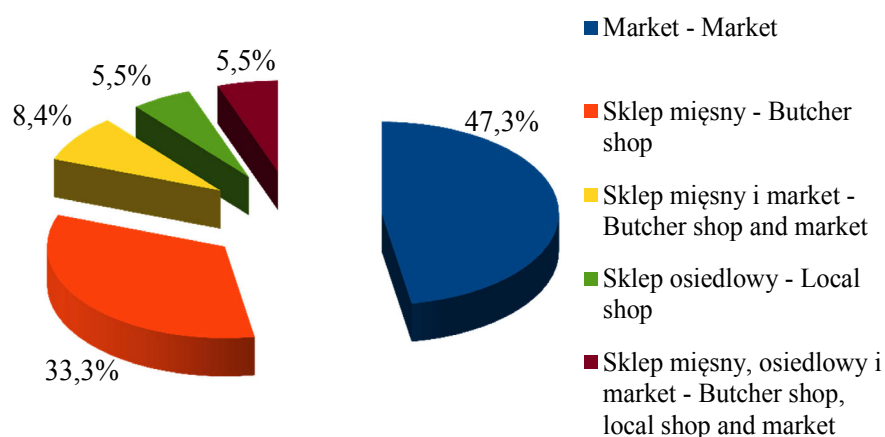


Fig. 1. Place of meat purchase (%)

Like in the research by Salejda et al. (2013), the most important criterion in our research for the selection of the type of the purchased and consumed meat was taste preferences, which accounted for 77.8% of the responses (Fig. 2). The price ranked second and suitability for the preparation of different dishes ranked third. Next, the respondents chose product availability, nutritional value and the impact of advertising. The results are consistent with the findings of the research by Troy and Kerry (2010) who

found that consumers pointed to taste and aromatic properties among the most important characteristics affecting the quality of meat. In the research by Kowalczyk (2007) conducted on a group of 100 respondents from Mazowieckie Province aged 50 and above, consumers selected the freshness of meat and its price as the most important criteria. According to Grębowiec (2015), consumers are often guided by the quality of meat and cured meat products in their purchase decisions.

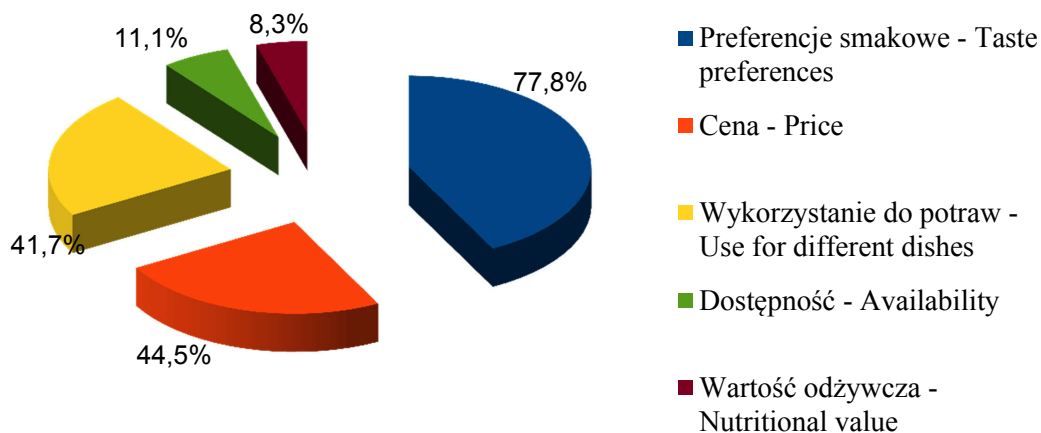


Fig. 2. Criteria of meat type purchase (%)

Meat consumption is linked to certain risks. This subject returns from time to time, especially in the context of African swine fever, avian influenza, the use of hormones and antibiotics and genetically modified organisms (Litwińczuk, 2012; Migdał, 2007; Sitarz & Janczar-Smuga, 2012). Despite the ban on the use of animal feeds containing antibiotics and hormones for feeding animals, nearly 70% of those surveyed considered these substances to be of greatest risk to meat quality (Fig. 3). The

use of feeds containing genetically modified components (22.2%) ranked second and the next places were taken by too low animal welfare (13.9%) and excessive production (12.1%). On the other hand, the research by Salejda et al. (2013) shows that the respondents considered the use of animal feeds containing genetically modified plants (31.3%) and microbial contamination with *Salmonella* to be the highest risk, while they were concerned the least about the presence of antibiotics in animal feed.

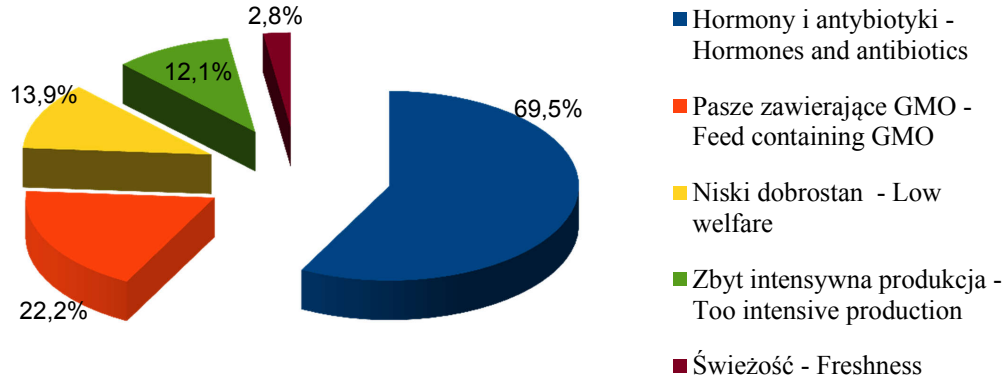


Fig. 3. Type of threat (%)

In contrast to the research by Nowak and Trziszka (2010), who found that respondents most often consumed cooked meat (84.3%), our research indicated that the largest number of respondents (41.7%)

consumed fried or roasted meat (Tab. 4). The same number of respondents declared that they preferred fried or cooked meat (13.9%), fried and roasted meat (13.9%) and cooked and roasted meat (13.9%).

Table 4. Ways of preparing meat

Heat treatment of meat	Share (%)
Fried	13.9
Fried, baked	41.7
Boiled, baked	13.9
Boiled, baked	13.9
Baked, stewed	8.3
Baked, stewed, grilled	8.3

Among the meat products covered by the survey, the respondents most commonly consumed smoked meat and sausages (23.3% of the total number of the respondents) or smoked

meat, sausages and offal sausages (22.9%) (Tab. 5). This group of products was chosen primarily by the youngest students (aged 20–25), while the older ones preferred smoked meat.

Table 5. Choice of meat products depending on the age group

Type of meat products	Age groups (%)			
	20–25 years old	26–30 years old	over 30 years old	total
Smoked, sausages	23.3	0.0	0.0	23.3
Smoked, sausages, offal products	22.9	0.0	0.0	22.9
Smoked, preserves	11.1	0.0	0.0	11.1
Sausages	8.6	0.0	0.0	8.6
Smoked, sausages, preserves, offal sausages, delicatessen goods	5.7	0.0	0.0	5.7
Smoked meat	5.7	5.7	5.7	17.1
Smoked, offal sausages	2.8	0.0	0.0	2.8
Smoked, sausages, preserves	2.8	2.8	2.8	8.4

Nearly half (44.5%) of all the respondents consumed meat products several times a week (Tab. 6), which is consistent with the studies by Nowak & Trziszka (2010) and Kosicka-Gębska & Gębski (2013). The smallest number of the respondents (2.8%) declared they consumed meat products several times a day. The youngest

students (aged 20–25) most often ate meat products several times a week. Among the respondents aged 26–30, these products were consumed once a day (5.6%) or several times a week (5.6%). Among the students over 30, the largest group was those who used the aforementioned products in their diet once a day (8.6%).

Table 6. Frequency of meat products consumption

Frequency of meat products consumption	Age range (%)			
	20–25 years old	26–30 years old	over 30 years old	total
Several times a week	36.1	5.6	2.8	44.5
Once a day	22.2	5.6	8.6	33.3
Twice a day	13.9	2.8	2.8	19.4
Several times a day	2.8	0.0	0.0	2.8

As in the case of meat, the vast majority of the respondents (47.2%) purchased meat products in supermarkets (Fig. 4). The same number selected butcher's (16.6%) or local shops, meat butcher's and supermarkets (16.6%) as the locations where they purchased this assortment. The research conducted by

Salejda et al. (2013) shows that meat and meat products are purchased mainly in large chain stores, i.e. supermarkets and hypermarkets and discount stores – large stores offering basic food and industrial products in a way that minimizes sales costs, such as Biedronka, Lidl, Żabka, etc.

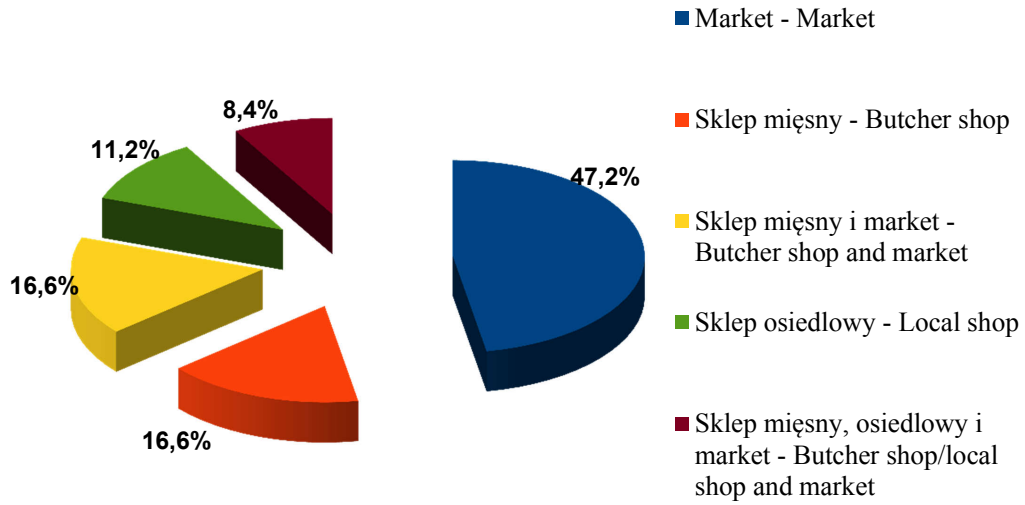


Fig. 4. Place to buy meat products

The vast majority of respondents (55.6%) declared they purchased meat products by weight, 36.1% purchased the above-mentioned products in trays and 8.3% – by weight and in

trays (Fig. 5). Similar results were obtained by Nowak & Trziszka (2010), where 77.7% of respondents indicated that they mostly bought meat by weight.

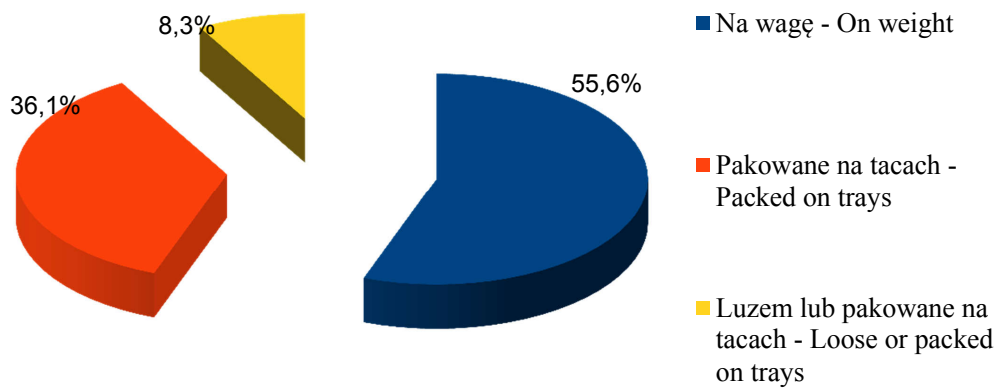


Fig. 5. The form of purchased meat products (%)

77.7% of the surveyed students rated the quality of meat as good, 16.7% – as sufficient and only 5.6% – as very good (Tab. 7). The research conducted by Połom and Baryłko-Pikielna (2004) shows that as many as 59.0% of respondents rated the quality of the pork meat they consumed as very good. It should be assumed that the reason for such a large difference in the results is that our research was carried out at the Faculty of Animal

Breeding and Biology of the UTP University in Bydgoszcz among Animal Husbandry students whose knowledge of meat quality and methods of its assessment is higher than that of the average consumer. According to Grębowiec (2015), consumers rate meat and cured meat products on the Polish market in terms of its quality, but their knowledge of quality management systems is not extensive.

Table 7. Quality of consumed meat

Quality of consumed meat	Share (%)
Very good	5.6
Good	77.7
Sufficient	16.7

As in the case of meat, most respondents (75.0%) rated the quality of meat products as good and 19.5% – as sufficient (Table 8). It is worth emphasizing that consumers are increasingly interested in high-quality food (Cichocka et al., 2016). The study by Font-i-Furnols and Guerrero

(2014) shows that the consumer behaviour in relation to meat and meat products depends on many factors. Consumers' preferences and feelings depend not only on the appearance and sensory properties of meat and meat products but also on the psychological and marketing aspects.

Table 8. Quality of consumed meat products

Quality of consumed meat products	Share (%)
Very good	5,5
Good	75,0
Sufficient	19,5

Recapitulation and conclusions

Based on the survey conducted among consumers, who were students of Animal Husbandry at the Faculty of Animal Breeding and Biology of the UTP University in Bydgoszcz, it can be stated that the respondents ate mainly poultry (36.2%) and pork (27.8%). Most of the respondents bought meat and meat products several times a week in supermarkets. The vast majority used frying or roasting as a heat treatment (41.6%). Taste preferences were the

most important criterion for the choice of the type of meat and meat products. The majority of surveyed students assessed the quality of meat and meat products as good.

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**CONSUMER PREFERENCES RELATED TO THE PURCHASE
AND MEAT CONSUMPTION**

Summary

The aim of the study was to present the consumer preferences related to the purchase and consumption of meat products based on a survey research. The questionnaire had 47 questions. The study was conducted in 2015 on a group of students of Animal Production course at the Faculty of Animal Breeding and Biology of the University of Science and Technology in Bydgoszcz. The examined group consisted of 50 University students. The majority were women (69.5%). The surveyed students mainly eat poultry meat (36.2%) and pork (27.8%). Most respondents bought meat and meat products several times a week in markets. The vast majority used frying or baking as a heat treatment (41.6%). The most important criterion for the choice of type of meat products were taste preferences. The majority of the examined students evaluated the quality of meat and meat products as good.

Key words: consumer preferences, meat products, survey research