

Nutritional habits and the structure of consumption in the Kashubian population of the town of Jastarnia (the Hel Peninsula)

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Abstract

The first part of the present study is a description of the Kashubian population inhabiting the Hel Peninsula. Further, the author follows the changes of the dietary pattern and the nutritional habits of this population over a span of more than one hundred years. The past nutritional habits (prevailing in the 18th century and in the first half of the 20th century) were reproduced on the basis of ethnographic source materials. The present day diet was determined on the basis of the data obtained by way of weekly family questionnaires and daily individual questionnaires distributed in September, June and November in Jastarnia among Kashubian families and school children. The results were then compared with the literature data and discussed.

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The Kashubians from the Hel Peninsula

Jastarnia is considered the most beautiful locality on the Hel Peninsula. From the 1970s it has enjoyed the official status of a town and holiday resort. Yet, only half a century ago it was a typical fishing village whose characteristics still, to a large extent, govern the everyday life of the present town.

Jastarnia is situated almost exactly in the centre of the Hel Peninsula (Fig. 1). This approximately 35-kilometre long ridge of sand was formed as a result of the interaction between the sea currents, the waters discharged by the Vistula

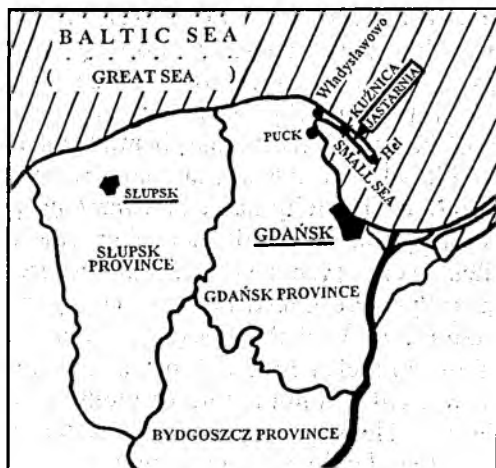


Fig. 1 Map of Kashubia

river and the wind. The peninsula lies within the boundaries of the Gdańsk Province. It separates the waters of the Puck Bay, called by the locals the “Small

Sea”, from the Baltic, bearing the local name of the “Great Sea”. Its width varies between 200 m at the isthmus and 3 km at the tip. The entire area is covered with dunes [GOŁĘBIEWSKI 1888, LECHOWICZ-KWIECIEŃ 1958].

The earliest mention about Jastarnia is dated back to 1378 [BATOROWICZ 1950/51, *Słownik...* 1882], yet its origins might reach much further back. Some researchers associate the name of Jastarnia with the name of a pagan deity Jaster. E. Michałowski – the printer of *Obrazki rybackie* (Scenes from the life of fishermen) by Hieronim GOŁĘBIEWSKI [1888] notes the similarity of cores in the two names: the name of the deity and the German name of Easter–*Ostern*. Having referred to the source materials he presents the following reasoning: the word *Ostern* denoting the Christian Easter derives from *Ostarmanoth* or *Ostermonat*. This was the name the pagan Anglo-Saxons called the month of April. In this way they paid homage to *Ostara* – the goddess of the rising sun, worshipped in the early spring by burning fires on the neighbouring hills. Similar bonfires made on hillocks by the pagan Slavs were a tribute to the deity named *Jastrzebóg*. It is likely that the hillocks where these rites were practiced particularly frequently were called *Jastrzebóg*. As an example E. Michałowski gives the name of the hillock between Linia and Miłoszewo, villages in the former Wejherowo district. He suggests that also Jastarnia was founded on a sandy mound of a considerable height. In this context he derives the name of Jastarnia from the name of the deity. At this point it, is worthwhile mentioning that mountains are given symbolic dimension in many religions of the world. A mountain is a

place where land meets the sky with its supernatural powers. It is the place of revelation, a peculiar “centre of the world” [ELIADE 1966]. The Slavs performed their rites on hills and in many Kashubian villages the tradition of making bonfires during the St John’s night has been alive for many centuries [PERSZON 1993]. Bonfires were also lit on Easter eve and Easter Monday was called *Vjelgônoc* or “Jastr” [LORENTZ 1934]. Hieronim GOŁĘBIEWSKI [1888] also associates the name of *Jastarnia* with the German name *Ostern*. He also suggests that in ancient times, around Easter the Kashubians from the inland parts of the region flocked to the Hel Peninsula to catch salmon – at that time the most popular species in the coastal waters. The settlement they lived in during this period was named Jastarnia. Thus, at its origins Jastarnia was inhabited only periodically. Further development of the settlement took place as late as in the 16th and 17th centuries (after BATOROWICZ [1950/1951]). In any case, the Kashubians inhabited Jastarnia from the earliest times.

The Kashubians are an autochthonous group within the Slavic population of Pomerania, considered to be the descendants of the eastern branch of the historical Pomeranians. The contemporary Kashubians are an ethnic and cultural community with a strong sense of national identity. They have their own language falling apart into numerous dialects. Before the outbreak of World War II, F. LORENTZ [1934] distinguished as many as 76 of such dialects. The status of the language spoken by Kashubians is still debatable. Some researchers, LABUDA [1934] being one of them, classify it as a separate language, others, like DEJNA

[1992], place the Kashubian language among the dialects of the Polish language, yet branding it the most distant one from the literary Polish.

Under the actual administrative system the Kashubians are territorially split into three provinces: Gdańsk, Słupsk and partially Bydgoszcz (Fig. 1). However, the Kashubians "by origin" come in the prevailing majority from the Gdańsk Province, where over 68% of the inhabitants come from pure Kashubian families (both parents Kashubian) while the share of people coming from non-Kashubian families (neither of parents being a Kashubian) is only 17%. Kashubian is spoken, with variable frequency by over 70% of the inhabitants (this including 52% of those speaking the language daily or very often). Only 7% of the inhabitants of this province do not understand the Kashubian language [LATOSZEK 1996].

The Kashubians from the Hel Peninsula have a unique status within the Kashubian populations inhabiting the territory of Poland. Specific geographical conditions of the peninsula accompanied by the lack of roads and means of transport inhibited the contacts with other groups and did not promote migrations. Rev. Gołębiewski, the parish-priest in Jastarnia in the second half of the 19th century, wrote that in order to get to the nearest village of Kuźnica (formerly Kusfeld) located 7 km away from Jastarnia he had to travel for 53 minutes in an oxen-drawn cart – this being the shortest time attainable, and only on frozen ground [GOŁĘBIEWSKI 1888]. The road distance between Jastarnia and Gdańsk is 90 kilometres. However, the road along the peninsula was often buried under dune sands and could not serve its pur-

pose for the inhabitants. The Kashubians used their boats in order to get to Puck or Gdańsk to do shopping and sell fish. During frosty and snowy winters the situated villages along the peninsula were practically cut off the rest of the world. Sometimes the villagers crossed the frozen Puck Bay on foot. Such an expedition took at least three days both ways but it could even extend over a week (after: GIERSZEWSKI [1979]).

Besides the isolation due to geographical and transport barriers, which were gradually disappearing with the construction of the Puck–Hel railroad in 1922, the social structure was another factor integrating and consolidating the sense of solidarity among the Hel Kashubians. From the earliest times fishing was the sole occupation of inhabitants of Jastarnia (and other settlements along the peninsula). According to source documents from the second half of the 19th century, there was not a single craftsman, no shoemaker, blacksmith, nor a tailor among the locals at that time [*Słownik...* 1882]. For many centuries fishermen worked collectively, close co-operation being a key to successful fishing. For that purpose, the Kashubians set their own fishing co-operatives. The whole economics of a village were based on the operation of these co-operatives, which dealt with everything, from the organisation of fishing trips to the fair distribution of the profits. These co-operatives had yet another important function: they fulfilled the role of the fishermen's self-government. Their principal goal was the welfare of all the residents of the village. The contributions were used to finance the village priest, the school and the teacher, to aid widows, orphans and the sick [BATOROWICZ 1950/1951, 1971,

GOŁĘBIEWSKI 1888, KUCHARSKA 1951, 1968, LORENTZ 1934, *Słownik...* 1882]. With time, the co-operatives started to decline. However, despite the new sources of income (such as tourism services), which developed on the greatest scale after World War II, still almost 60% of the population earn their living from fishery and another 13% have related jobs, working both for individual fishermen and fishing companies. The job of a fisherman is still esteemed among the Hel Kashubians – as much as 92% of the population consider it to be highly or moderately prestigious. Moreover, as much as 93% of respondents claim moderate or high satisfaction with their actual job. Most often the job of a fisherman is, by tradition, passed down from father to son. Almost 80% of the subjects' fathers were or still are fishermen [DOLMIERSKI *ET AL.* 1989].

The sense of attachment to their land has been very strong among the Hel Kashubians throughout the history up to the present times. Still, over 90% of the subjects would rather live their entire life in the place of their birth. Only 7% would decide to move to other locations. The reasons behind such a strong affinity to the motherland include the specific climate, the beauty of the coastal landscapes and family ties [DOLMIERSKI *ET AL.* 1989].

For the Kashubians the family life has always been of primary significance. The mating system was a strong integrating factor within the communities inhabiting the Hel Peninsula. Sociologists specialising in social migrations rate marriage as the most significant indicator of the degree of integration. Up to the recent times the Kashubians from Jastarnia and from another village, Kuźnica, found their spouses in their own or in adjacent

municipalities [GAŁASIŃSKA-POMYKOŁ 1965, SZEWKO-SZWAYKOWSKA 1966]. In the second half of the 19th century the intensity of exogamy in Jastarnia and Kuźnica, calculated as the proportion of strangers in the total number of newlyweds, was small. The exogamy coefficient was only 0.15 [BUDNIK 1996] as compared to 0.50 in the villages of the Wielkopolska region [HENNENBERG 1978]. Presently, exogamy reaches 63% among the Hel Kashubians and as much as 92% in the Wielkopolska region [BUDNIK 1996].

Based on the mating system and on the degree of exogamy one can determine the degree of isolation of the group under study, and thus the possibilities of gene exchange between the populations. The level of isolation is determined synthetically by the kinship coefficient f . On the basis of the archival parish registers, its value at the close of the 19th century was initially estimated at a considerably high level ($f = 0.2122$, BUDNIK [1996]). This indicates a very strong biological isolation of this population. The process of overcoming the isolation started fairly late – upon the construction of a railroad along the peninsula – and gained on intensity only after World War II. As a result, the f coefficient is still higher than in the rest of Poland. Its value is close to that determined for the population of the Wielkopolska region in the 19th century (in Wielkopolska in the 19th century $f = 0.0013$ – HENNENBERG [1978], presently: in Wielkopolska $f = 0.0001$, while in Jastarnia and Kuźnica $f = 0.0016$ – BUDNIK [1996]).

To conclude the above analysis I would like to state once again that the specific geographic conditions of the Hel Peninsula and centuries-long period of

restricted development of the settlements complete with very strong attachment of the locals to their motherland, to the sea and to their tradition resulted in the long-lasting isolation of the peninsula, leading to the formation of an integrated population group with strong kinship ties and job relationships, with a separate culture in both the material, social and spiritual dimension. The isolation of the Kashubians is gradually decreasing. Hence, their culture is likely to be gradually penetrated by elements of the broadly understood Polish culture (from the interior of Poland).

Further in the paper I will deal with the issue of changes observed in one of the aspects of the Kashubian culture, namely in nutritional habits and the diet of the Kashubians.

Materials and Methods

The historical nutritional habits and the diet of the Kashubians were reproduced from the 19th century sources [GOŁĘBIEWSKI 1888, *Słownik...* 1882] as well as on the basis of ethnographic studies [GUTTÓWNA 1950/1951, LORENTZ 1934]. These materials include both the observations made directly by the authors and the conversations – interviews with the senior members of the population still remembering the past beliefs, rituals and customs observed in the previous century and in the first half of the 20th century (precisely up to the year 1949).

The place selected for the investigation of the contemporary diet of the Kashubians was Jastarnia. Weekly diet questionnaires were distributed among 35 randomly chosen families counting altogether 145 people. The questionnaire

listed several groups of food products: milk and dairy products, groats, eggs, butter and cream, other fats, meat (including fish) and meat products, potatoes and other vegetables, fruit, sugar and sweets. Each day throughout the week housewives made scrupulous records of the types and quantities of food products consumed by the whole family. These amounts were subsequently converted into the nine main groups of food products (see Table 1) according to the conversion tables given in the paper by SZCZYGIEŁ [1970]. The dairy products were converted into the “pure” milk equivalent, cereals into flour equivalent, cream – into butter equivalent, smoked and otherwise processed meat products – into meat equivalent and finally sweets into pure sugar equivalent. The data prepared in this way were the basis for the calculation of the quantity of each product actually consumed daily by an “average” member of a given family. With the known structure of families, for each member of the family the recommended rations of a given product were determined based on the nutrition standards [SZCZYGIEŁ 1970]. These rations subsequently calculated per family and per product were used to determine an average daily food ration (per a family member). In other words, the percentage value of the dietary standard actually reached in Kashubian families was calculated (according to PRONCZUK [1983]). In a similar way the consumption levels were assessed for energy, proteins, fats and hydrocarbons. For that purpose, food composition and nutritive value tables [PIEKARSKA *ET AL.* 1983] as well as the dietary standards recommended in Poland [PRONCZUK 1984, SZCZYGIEŁ 1970] were used.

The recommended nutrition standards correspond to the safe intake levels. They are different for each of the population groups distinguished with respect to age, sex, intensity of physical work and, in the case of women, also with respect to the physiological aspects, such as pregnancy and lactation. The amounts of nutrients determined by the dietary standards fully satisfy the demand of 95% of the group members. The amount of energy given in the standards corresponds to the average demand for energy of the entire group. The recommended nutrition standards refer to the actual consumption of particular nutrients and energy. They correspond to the US Recommended Dietary Allowances or the FAO/WHO Recommended Intake of Energy and Nutrients [PROŃCZUK 1984]. The daily food ration in the studied Kashubian population was compared to the data obtained in a similar way in the villages of the Wielkopolska region [BUDNIK, WOJTKOWIAK 1996]. In the questionnaires the subjects were asked to specify also the types and regularity of their meals.

Additionally, a daily survey was made in the Primary School in Jastarnia. The number of children, aged between 10 and 14, totalled 123 (including 67 girls and 56 boys). Their menus were assessed using the Bielińska's point estimation method (after BĄCZYK, SZCZEŚNIAK [1990]). The following elements were taken into account: the number of meals during the day, the intervals between the meals, the number of meals including animal proteins, milk and dairy products, vegetables and fruit (including those rich in vitamin C and β -carotene), salads, wholemeal bread and groats. The maximum score was 40 points. Menus rated between 32 and 40 were considered

proper, between 21 and 31 – proper with deficiencies, 20 and less – improper.

Results and discussion

Past nutritional habits of the Kashubians inhabiting the Hel Peninsula

The researchers investigating the diet of the Hel Kashubians in the past century considered it extremely poor [Słownik... 1882]. In fact, due to the scarcity of resources the Kashubians could not live on a profuse and diverse diet. Cultivation and animal breeding could hardly develop on sandy soil. Moreover, the character of their job made the Kashubians dependent on the weather and the changing condition of the sea. For this reason, during the periods of harsh weather the fishermen's families faced food shortages. However, most of the time it was never as bad as that.

The principal foodstuffs, such as flour, potatoes and other products were transported from Gdańsk. The Kashubians also tried cultivation of spring rye and potatoes on their sandy soil. Many vegetables and fruit remained unknown to them. In the second half of the 19th century radishes cultivated in the parish priest's garden (the only one in the village) aroused not only curiosity but virtually disgust. At that time there were only several fruit-bearing trees in Jastarnia – one apple tree and a few cherry-trees. There were also a number of cows, pigs, sheep, geese and hens. From milk the housewives produced butter which was sold in Gdańsk. Eggs were another commodity sold externally [GOŁĘBIEWSKI 1888, Słownik... 1882].

However, it was fish that was the staple food and the main commodity of

the Kashubians. Fish were caught during several periods throughout the year. During the three summer months (June, July, August) flounder were caught, in September and October – herring, eel and sprat and in spring (March, April and May) – salmon. Sometimes in June European whitefish were caught in the Puck Bay, and in winter perch, roach and pike were fished from under the ice [GOŁĘBIEWSKI 1888, *Słownik...* 1882]. There were many ways to prepare fish both on working day and for holiday. It was also a dish served on special occasions, such as the meetings of the fishing co-operative members, visits of the guests from the coast during the annual fair, etc. Fish was served boiled, simmered, fried, roasted or smoked. There was a special smoke-curing chimney in the hall of every fisherman's house. Some species, for example flounders were dried in the open air. Eel had a prominent position among the fish eaten by the Kashubians. It was salt-cured, eaten raw (even children liked it in this form), cooked or roasted. Eel with potatoes and dill sauce was considered a delicacy. Also smoked eel and eel soup were their favourites. Eel with potatoes and plum dumplings were the two traditional Christmas dishes [GUTTÓWNA 1950/1951, LORENTZ 1934].

In winter the Kashubian diet was supplemented with the meat of seals caught in the bay. Seal liver was considered a delicacy and was also used for the production of liver oil [GOŁĘBIEWSKI 1888, *Słownik...* 1882].

A local custom (practised exclusively in Jastarnia) was catching the crows flying over the peninsula in spring. The birds were caught in special snares with sprat or herring used as bait. In this way boys from Jastarnia used to catch as many

as 30–40 birds at a time. Crows were served boiled. According to Hieronim Gołębiewski crow meat resembled chicken in taste [GOŁĘBIEWSKI 1888, LORENTZ 1934].

All the dishes (especially fish dishes) were strongly salted. The Kashubians showed a strong dislike for sweet food (such as food with the addition of honey). However, in Kuźnica women occasionally baked local doughnuts (*purle*). Grated potatoes with buttermilk – a dish extremely popular among the Kashubians from the Pomeranian Lake District – were also disliked on the peninsula [GOŁĘBIEWSKI 1888, GUTTÓWNA 1950/1951, LORENTZ 1934].

Fishermen's families in Jastarnia ate four meals a day. For breakfast each had a dozen and some sprats with bread and grain coffee. Fish was eaten also for dinner: fresh in summer, salt-cured in winter, boiled or roasted over live coals, served with potatoes, groats, plums or peas. Occasionally, pork fat and pickled meat from own stock were served. Afternoon snack resembled breakfast, while supper was similar to dinner. Sometimes, coffee replaced peas and plums [GOŁĘBIEWSKI 1888].

The fishermen's favourite drink was *bejersz* – Bavarian beer bought in Gdańsk. Not only was it drunk at social gatherings but also during work, such as the sewing of fishing-nets. Also the nets were profusely splashed with beer, which was supposed to attract fish. It appears that from time to time the Kashubians indulged in drinking that beverage. For example, at fishing co-operative meetings which were traditionally held on the second day of Christmas and which towards the end changed into social gatherings the group could drink 8 barrels of beer, 14 litres each. This makes 112

litres of beer per single night. Here, it should be mentioned that in 1892 the population of Jastarnia (Putziger Heisternest) totalled 376 Kashubians [RAMUŁT 1899]. Another popular alcoholic drink was fishermen's wine (*rđbackjé vjino*). This wine was a speciality of the Hel Kashubians. It was made of ether, sugar, vinegar and additives. Its strength impressed Rev. Gołębiowski, the Jastarnia parish-priest who noted that only fisherman's head could stand it and he himself having drunk two glasses of this wine had "a most terrible headache" for two days. Wine and sweetened beer were also drunk by women. Vodka, on the other hand, was uncommon on the peninsula. The Jastarnia fishermen, being orthodox Catholics, set up an abstinence brotherhood. Church ceremonies at which vows of abstinence were renewed were quite frequent there [GOŁĘBIEWSKI 1888, GUTTÓWNA 1950/1951, LORENTZ 1934].

The diet of the contemporary Kashubians from Jastarnia

Assessment of family questionnaires

The structure of consumption of the main groups of food products is shown in

Table 1 and is represented graphically in Figure 2. As it has already been mentioned, product categories such as milk, flour, butter, meat and sugar denote these main products themselves plus other products converted into the "pure product" equivalent. Thus, "milk" category stands for milk but also for milk products converted into pure milk equivalent, "flour" denotes all sorts of cereal products, such as bread, cakes etc. apart from flour itself, "butter" denotes butter and cream converted into butter equivalent, "meat" stands for meat and other meat products, including fish, while "sugar" refers to sugar plus sweets converted into "pure" sugar equivalent.

The data indicate that the intake of an average member of the Kashubian family was significantly below the standards with respect to milk, flour, potatoes, other vegetables and fruit. In the case of vegetables and fruit, their intake covered only 56% of the standard. Insufficient intake of vegetables and fruit is a frequently indicated deficiency of the nutritional habits of Poles, especially those living in rural areas. In the rich villages of the Wielkopolska region the intake of fruit and vegetables only slightly exceeds

Table 1. Structure of consumption of the nine basic groups of food products among the Kashubian population in Jastarnia (per a family member)

Product	Average daily consumption per person (in grams; variation ranges given in brackets)	Average daily consumption per person related to the nutrition standard (as the percentage of the standard; variation ranges given in brackets)
Milk	495.4 (71.4-1229.2)	68.3 (8.8-45.5)
Flour	185.0 (100.0-359.9)	52.9 (26.0-142.9)
Eggs *	0.5 (0.0-1.1)	118.6 (0.0-365.6)
Butter	49.0 (6.0-128.6)	166.8 (19.8-428.7)
Other fats	27.7 (0.0-103.2)	121.5 (0.0-800.8)
Meat	190.0 (55.7-375.0)	164.8 (44.2-833.3)
Potatoes	282.4 (0.0-640.0)	64.4 (0.0-128.0)
Vegetables and fruit	324.7 (75.0-1071.0)	55.6 (12.3-297.6)
Sugar	91.6 (16.7-242.9)	154.4 (25.7-391.7)

* in pieces

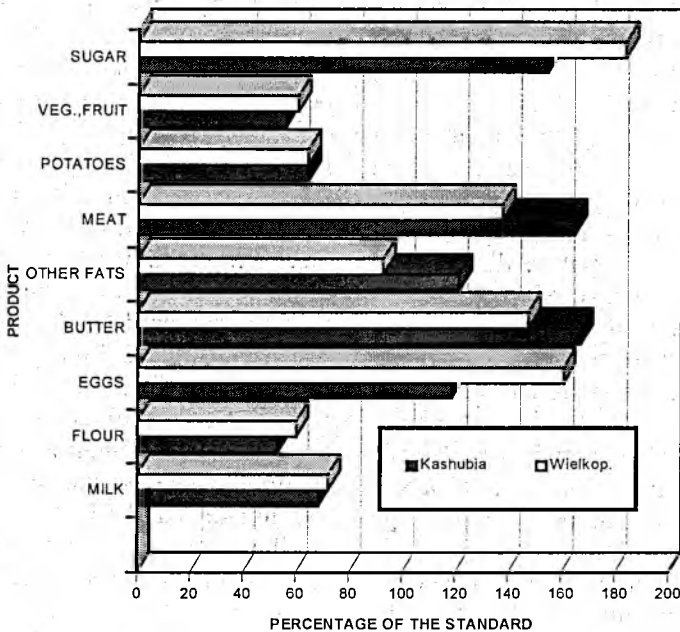


Fig. 2 Structure of consumption in the Kashubian population of Jastarnia and the among the inhabitants of the villages in the Wielkopolska region, related to the nutrition standards

the consumption in the studied Kashubian population (BUDNIK, WOJTKOWIAK [1996]; Fig. 2). However, in the Hel Peninsula the low intake could still be due to the insufficient supply of these products. Barren, sandy soil has always made cultivation difficult. In consequence all the plant products had to be bought on the coast.

In the period covered, the subjects consumed excessive quantities of meat, butter and other fats as well as sugar. Meat and fat intake in Jastarnia was much above the intake level in the villages of the Wielkopolska region – that still exceeding the recommended levels (BUDNIK, WOJTKOWIAK [1996], Fig. 2). Among meat dishes, fish still plays a major role. Fish has always been easily available due to the specific location and

occupation of the locals. Even nowadays many Kashubians live on fishing. Fishermen constituted 58% in the studied group of adult men. This complies with the literature data quoted above [DOLMIERSKI *ET AL.* 1989]. 91% of the Kashubian families participating in the study had fish in their menu. Generally, fish was served twice a week (50% of the families) but in some families (14%) it was eaten much more often. The most popular species were herring and flounder. Other species of fish present in their diet were cod, sprat, eel and salmon. Compared to the 19th century diet, the contemporary menu is supplemented with deep-sea species that started to appear on the Kashubian tables upon the development of the deep-see fishery being a more profitable business than the

traditional coastal fishing. Fish is prepared in a variety of ways: most often fried, but also raw – in oil or sour cream, smoked or cooked in broth.

It is a platitude to say that the intake of fats and animal fat in particular is too high in many countries of the world, with Eastern Europe and Poland being at the top of the list, and that civilisation diseases are related to this high intake. Since the underlying factors are well known, there is no need to discuss them further in this place. Unfortunately, this improper nutritional model is followed also by the Kashubians being the subjects in our study. Enormously high consumption of fats was observed among them. This could be due to the high intake of fish (fried fish in particular) in this group. The preferred fat was butter – eaten in large quantities in almost all the families surveyed (with only one exception). Another fat – popular and eaten in profuse quantities – was lard (60% of the families). Margarine and plant oils were much less popular. They were used in one-third of the households covered in the study.

High, for the Kashubians, consumption of sugar is to a high degree related to the consumption of sweets. Sweets in a variety of forms (cakes, biscuits, candies, chocolate) were in many cases eaten everyday. Home-made pies were most popular. Taste for sweets is a plague of our times. To make things worse, in Poland this is accompanied by a high consumption of fats. On the Hel Peninsula this inclination also results from the changes – unfortunately, not all of them for the better – taking place in the local lifestyle. As already mentioned, at the end of the previous century sweet food was considered disgusting by the Kashubians and their traditional dishes

were very salty [GOŁĘBIEWSKI 1888, LORENTZ 1934].

Altogether, huge intake of sugar was not related to the rise in the intake of carbohydrates among the Kashubian families (Table 2, Fig. 3). This might be due to the above-mentioned deficiency of fruit, potatoes and flour in the Kashubian diet. On the other hand, the intake of proteins and fats was significantly higher than the standard levels employed in the research (Table 2, Figure 3). As much as 74% of the families had their protein intake at the level of over 110% of the protein intake standard, and 43% of the families exceeded the level of 130% of the intake standard. The situation was similar in the case of fat consumption: 69 families in every 100 reached over 110% of the fat intake standard, 43% of the families – more than 130% of the standard; 11% of the families exceeded the standard over twofold. It appears that on average the Kashubian population from Jastarnia covered its energy demand in 110% (Table 2, Fig. 3). As much as 40% of the families consumed more than 110% of the standard energy intake, while 23% of them did not reach 90% of the standard intake.

Table 2. Daily consumption as the percentage of nutritional standard among the Kashubian population in Jastarnia (per a family member)

	energy	proteins	fats	hydro-carbons
average	110.1	129.9	134.3	91.6
minimum	58.3	61.1	68.1	44.3
maximum	208.3	255.2	269.1	167.3

In all the households studied at least three meals a day were prepared as a rule. Breakfast was served between 6 a.m. and 8 a.m., only sporadically sooner or later than that. Dinner-time was around 1.30 p.m. and supper was served

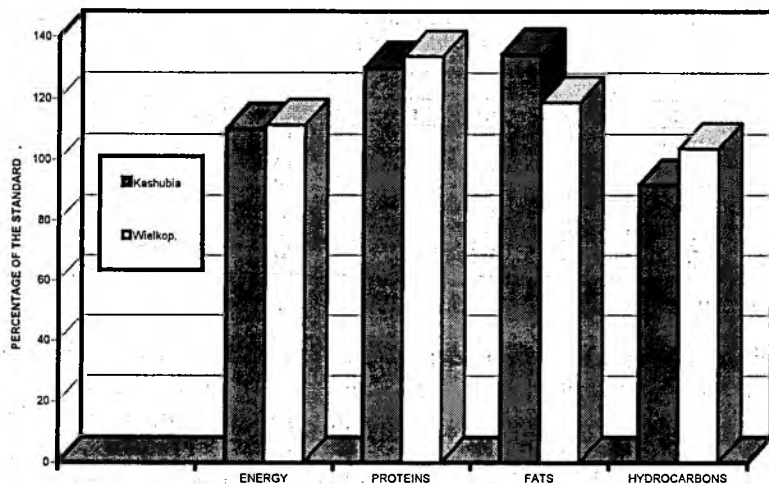


Fig. 3 Consumption of energy and basic nutrients in the Kashubian population of Jastarnia compared to the population of the villages in the Wielkopolska region

between 6 p.m. and 9 p.m., and most often around 7 p.m. In almost 52% of the families people had also lunch, most often between 10 a.m. and 11 a.m., sometimes at school or at work. In almost 64% of the families afternoon snack was prepared. For dinner, consisting most often of a single course, the subjects had soup (sometimes with a portion of meat) or the main course with meat or fish with potatoes and vegetables followed with dessert (most often in the form of stewed fruit). The afternoon snack usually consisted of home-made pie and natural coffee. Of course, this model changed in the fishing seasons. Then dry rations consisting of bread and canned food (meat and fish) prevailed in the Kashubian diet, with hardly any vegetables eaten at that time.

Assessment of the school-age children's menu

The surveys made among the school-age children from Jastarnia confirmed the previously observed deficiencies in the menu of the Kashubian population.

Rating of the individual mode of nutrition (Table 3) shows that as much as 81% of girls and boys followed a totally wrong dietary pattern. Only two of the subjects had a proper menu. Of the maximum of 40 points the average score was 15.2 points and all the subjects fell within the range between 2 and 35 points.

The most popular deficiencies can be summarised as follows:

1. Insufficient intake of vegetables and fruit. This deficiency was widespread and concerned over 90% of children. Almost 100% of the group never ate any salads.

Table 3. Assessment of daily menus of school-age children from Jastarnia (boys and girls taken together)

Category	No. of points	Percentage of children
Proper	31-40	1.6
Proper with deficiencies	21-30	17.1
Improper	20 and less	81.3

Table 4. Regularity of meals eaten by the Kashubian children in Jastarnia (in percents) compared to other Polish children from different social groups

Type of meal	Kashubian children			Other Polish children *	
	total	girls	boys	parents with university diploma	farmers' families
Breakfast	92.4	95.5	89.3	92.3	91.2
Lunch	38.0	49.3	26.8	49.7	40.0
Dinner	97.6	97.0	98.2	98.5	92.4
Afternoon snack	36.4	47.8	25.0	17.1	44.9
Supper	98.5	97.0	100.0	93.6	95.2
Irregular meals	40.0	30.0	50.0	16.1	38.7

* after: KONIECZNA [1977]

2. Insufficient milk intake. 81% of girls and 71% of boys drank milk seldom or never.

3. Excessive consumption of sweets. Consumption of sweets was higher among girls at the level of statistical significance (*t*-test). On the survey day over 95% of girls ate sweets and cakes and had sweet soft drinks, sometimes in large quantities. Sweets were eaten for afternoon snack and between the main meals. In isolated cases sweets were eaten even in place of dinner or supper. Excessively high consumption of sweets was noted in the case of 59% of boys.

Moreover, 42% of girls and 46% of boys showed insufficient intake of animal proteins.

Almost all the children had three main meals during the day (i.e. breakfast, dinner and supper). Only 4.5% of the girls and almost 11% of the boys did not eat breakfast. Lunch and afternoon snack were missed by over half of the girls and almost three-thirds of boys (this brings the difference between sexes to the level of statistical significance). Thus, there were over 5-hour intervals between the meals, sometimes extending up to 8 to 10 hours. The most harmful negligence was skipping of lunch. The consequences of such behaviour (including weakness at physical exercises and fatigue during the

lessons) had been described frequently. Parents are also considered partly to blame for this situation, mainly due to their ignorance of the basic principles of balanced nutrition. This is particularly evident in the group of farmers and labourers (e.g. KONIECZNA [1977]). As far as regularity and frequency of meals is concerned children from Jastarnia are the closest to the children of farmers (Table 4). Poor education is characteristic of both of the groups. In the population surveyed in Jastarnia only 19% of adult males and 26% of females had either a university degree (this occurring only sporadically) or high school diploma. Moreover, 56% of the women have never had any job.

Conclusions

Due to a limited survey material available it would be inappropriate to "extend" the results obtained over the entire population of the Hel Peninsula. Nevertheless, the data obtained show the tendencies in the changes in the mode of nutrition of the Hel Kashubians and are a sufficient basis for drawing a few general conclusions:

1. Fish still is a major component of the diet of the Kashubians. It is a popular dish eaten not only as a main course but also in

the form of cold snacks. Higher than in other regions of Poland level of fish consumption, similarly to the irregular, monotonous and poor in vitamins and nutrients fishing season meals – are the characteristics of the diet and nutritional habits of the Kashubians. This can be attributed to the geographical location of the region they inhabit and to their occupation.

2. It appears that other, general tendencies in the nutritional habits of the contemporary Kashubians correspond to the nutrition tendencies in Poland as shown by the previous studies. In particular, the Kashubians did not manage to avoid copying some basic dietary mistakes common in other populations (e.g. SZOSTAK [1976], [1991], SZPONAR ET AL. [1974]). This was proved both by the results of the weekly diet surveys made in Jastarnia and by the individual assessments of daily menus of Kashubian children.

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Streszczenie

Pierwszą część opracowania poświęcono historii Kaszubów z Półwyspu Helskiego oraz ich charakterystyce socjologicznej, demograficznej i genetycznej. Wskazano przyczyny długotrwałej izolacji tej grupy ludności i, co za tym idzie, jej odrębności w zakresie kultury materialnej, społecznej i duchowej. Przedmiotem drugiej części pracy były badania przemian w czasie jednego z elementów tej kultury, jaki stanowią zwyczaje pokarmowe i dieta.

Dawne zwyczaje żywieniowe wśród Kaszubów helskich (XIX i pierwsza połowa XX wieku) odtworzono w oparciu o materiały etnograficzne [GOŁĘBIEWSKI 1888; GUTTÓWNA 1950/195; LORENZ 1934]. Współczesną dietę kaszubską oceniono na przykładzie Jastarni, na podstawie tygodniowych ankiet żywieniowych zebranych jesienią w 35 kaszubskich rodzinach (145 osób) oraz indywidualnych dobowych ankiet żywieniowych przeprowadzonych jesienią i wczesnym latem wśród dzieci kaszubskich ze Szkoły Podstawowej w Jastarni (123 dzieci w wieku od 10 do 14 lat: 67 dziewcząt i 56 chłopców).

Wartość dziecięcych jadłospisów oceniono punktową metodą Bielińskiej (za: BĄCZYK, SZCZĘŚNIAK [1990]; tab. 3). W oparciu o rodzinne ankiety żywieniowe oszacowano dobowe procentowe spożycie (na „średnią” osobę w rodzinie) podstawowych grup produktów spożywczych oraz białek, tłuszczów, węglowodanów i energii w stosunku do odpowiednich zalecanych norm żywieniowych (tab. 1 i 2, rys. 2 i 3). Korzystano z norm SZCZYGŁA [1970] i PRONCZUKA [1984] oraz tabel składu i wartości odżywczych żywności [PIEKARSKA i in. 1983]. Wyniki porównano z danymi z piśmiennictwa (BUDNIK, WOJTKOWIAK [1996] – ze względu na zastosowaną metodykę badań, rys. 2 i 3; KONIECZNA [1977], tab. 4) i poddano dyskusji.

Najważniejsze rezultaty pracy podsumować można następująco:

1. Duży udział w diecie kaszubskiej mają, podobnie jak w XIX wieku, ryby. Większe niż w głębi kraju spożycie ryb oraz nieregularne, monotonne, ubogie w witaminy i składniki mineralne posiłki rybaków w okresach połowów, a w XIX wieku dodatkowo „stoność” wszystkich potraw i brak słodkich posiłków, stanowią odrębności w jadłospisach i zwyczajach pokarmowych Kaszubów helskich, wymuszone miejscem zamieszkania i rodzajem wykonywanej pracy.

2. Pozostałe, ogólne tendencje w zachowaniach żywieniowych współcześnie żyjącej ludności kaszubskiej wydają się zgodne z obserwowanymi wcześniej trendami spożycia żywności w Polsce. W szczególności, nie uchroniła się ona przed powielaniem niektórych podstawowych wad w diecie, występujących powszechnie w innych środowiskach (np. SZOSTAK [1976], [1991]; SZPONAR i in. [1974]). Potwierdzają to zarówno przeprowadzone w Jastarni tygodniowe ankiety dotyczące żywienia całych rodzin, jak i indywidualne oceny jednodniowych jadłospisów dzieci kaszubskich w wieku szkolnym. Najczęściej popełniane błędy, to: 1) zbyt duże spożycie tłuszczów pochodzenia zwierzęcego (masła i smalcu) oraz mięsa (choć nie miały udziału w daniach mięsnych miały ryby), co znalazło odzwierciedlenie także w większej konsumpcji białek, tłuszczów i energii; 2) nadmierne spożycie słodczy; 3) zbyt małe spożycie warzyw i owoców (już od XIX wieku); 4) obniżone spożycie mleka wśród dzieci i niespożywanie przez nie drugiego śniadania.

Variability of trace element content in human tooth sequences – a multivariate analysis

Krzysztof Szostek

Abstract

Analyses of human bone material expand our knowledge of aspects of modern and historical population ecology, the etiology of diseases, reconstruction of historical diets, and the social and economic status of human groups. 35 adult lower jaw tooth sequences from the 17th-century Cracow population were analysed. The skeletons were found in crypts of the medieval St. Mark's church, following international standards. Levels of Pb, Zn, Cu and Cd were determined in undamaged permanent teeth P1, P2, M1, M2 and M3, using anodic stripping voltammetry (ASV), while strontium concentrations were determined using AAS method.

There were statistically significant differences in the levels of the analysed trace elements within the investigated tooth sequences. High interspecimen variability in the amount of accumulated microelements, probably resulting from nutritional, developmental and physiological stress, was also observed. The accumulation of Pb, Cd and Zn was the highest in M3 teeth and the lowest in M1.

The results indicate that only one type of teeth should be used for intergroup and intragroup comparison of trace element content.

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Introduction

Studies of both historical and modern human populations increasingly often apply chemical and physico-chemical methods aimed at extending the body of knowledge about the biological status of human groups, diet and paleodiet and etiology of various diseases [KEEGAN, 1989, STUART-MACADAM 1989, KATZENBERG 1992, ROTHSCHILD 1992, SANDFORD 1992, AMBROSE 1993, KLEPINGER 1993]. In many cases it is no longer merely determining the mean concentrations of toxic

trace elements and biogenic elements in various materials (blood, hair, nails, bones, teeth) characteristic of the studied group. Applications have been developed with the objective of finding the best indicators of the environment's impact on the body [BROCKHAUS 1988, SZOSTEK 1992, BERCOVITZ & LAUFER 1993, GIL *ET AL.* 1994, GŁĄB & SZOSTEK 1995, EVANS *ET AL.* 1995] and specific indicators of various diseases [FORNACIARI *ET AL.* 1981, STUART-MACADAM 1985, KLEPINGER 1993, GRUPE 1995]. In many cases, chemical analyses are used to develop precise models to determine nutritional status and social status, which is often associated with the diet [AUFDERHEIDE *ET AL.* 1981, SILLEN