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## THE NUTRITIONAL HABITS AMONG CENTENARIANS LIVING IN WARSAW

### ZWYCZAJE ŻYWIENIOWE STULATKÓW MIESZKAJĄCYCH W WARSZAWIE

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*The aim of the study was to determine the preferences and nutritional habits of Warsaw centenarians during their "third period" of life. Centenarians in the past rarely eaten between meals, rarely ate sweets or used alternative diets. Physical activity, no smoking and irregular drinking of small amounts of alcohol contributed to the general good health condition of centenarians.*

**Key words:** centenarians, food preferences, nutritional habits

**Słowa kluczowe:** stulatkowie, preferencje żywieniowe, zwyczaje żywieniowe

## INTRODUCTION

Although in all probability the longevity is determined by genetic factors, life span is also affected by many different environmental and psychosocial factors, among others diet and life style [11, 17].

The results of earlier studies indicated that taste sensitivity of the centenarians is significantly lower than ability to perceive taste by younger elderly. Worse sensitivity to taste is often associated with cigarette smoking [9]. The food preferences are one of the most important factors affecting the food intake of the elderly [6]. Age-related reduction of sensory abilities may lead to weight loss, which is correlated with increased mortality rate [16]. Although it is often thought that the elderly are resistant to dietary change, the data show that each of them is making some alteration of food habits [1].

It appears to be very useful to conduct a research on nutritional habits of the very special group of people – the centenarians during their life.

Therefore the aim of this study was to determine food preferences and nutritional habits among centenarians living in Warsaw.

## MATERIALS AND METHODS

The study was conducted in Warsaw in the years 2001-2004. The full details of methods and choice of group for the study of Warsaw centenarians was presented in other paper [12]. Among 33 centenarians, 29 participants filled with the help of family or interviewer a questionnaire consisting of 12 questions on nutritional habits and another questionnaire on the frequency of food intake in three periods of life – before the age of 60, after the age of 60 and at present (during the study). The results were compared with dietary guidelines for elderly due to the lack of special guidelines for people 85+ years old. The results were analyzed statistically with the use of Chi-square, *Wilcoxon*, *Kruskal-Wallis* and *Mann-Whitney* test ( $p < 0.5$ ) and the Statistica v 6.0 and SAS 8.2. computer programs.

## RESULTS AND DISCUSSION

Twenty nine centenarians filled in the questionnaire. The demographic data were similar to the one described by *Pietruszka et. al.* [12]. 26 females and 3 men took part in this study. The proportion of females to males was different (higher) then in the population of centenarians in Poland. It was also higher than found in other countries [10, 15]. The average age of women and men was almost the same (100,1 years). The youngest individuals were four women and one man 100 years old and the oldest was woman aged 107. Twenty two people (76%) lived with a family, two of them with spouses.

Table I. Changes of weight, height and BMI of Warsaw centenarians by gender

Parameter		Median	Range	Mean (SD)	p-value <sup>a</sup>
		Men (n=3)	Women (n=26)		
BMI (kg/m <sup>2</sup> )	Men	23.3	20.3-27.1	23.7 (3.5)	< 0.030
	Women	22.1	17.9-27.4	22.6 (2.9)	
Loss of weight (kg) between 50 and 100 years	Men	10.3	17.0 – 24.0	8.7 (12.1)	< 0.001
	Women	13.8	2.0 – 27.3	12.6 (9.5)	
Loss of height (cm) between 50 and 100 years	Men	13.0	11.0 – 15.0	13.0(2.0)	NS
	Women	14.0	5.0 – 20.0	13.4(3.9)	
Changes of BMI index between 50 and 100 years	Men	-5.9	-5.9 - -2.3	-4.1(2.6)	NS
	Women	-0.4	-6.8 – +3.5	-1.3(3.0)	

<sup>a</sup> *Mann-Whitney* test between sexes

Table I presents BMI and its changes during 3 periods of centenarians' life and loss of weight and height between 50 and 100 years of age. BMI value for 11 people could not have been calculated, but for the majority (12) of the rest of respondents it was proper when compared with to the norm for elderly. Effort has been taken to eliminate the data which seems unreliable. Two women were underweight and six individuals (including 4 women) were overweight. Although low BMI value as well as the high one correlated with rising of mortality risk [8, 14]. Interpretation of the results of anthropometric measures is not easy because of the lack of appropriate standards for individuals above 75 years of age [9, 18]. However, it should be emphasized that BMI is generally used as an index of a nutritional status [2, 9]. The median of BMI value decreases between 50 and 100 but it does not depend on sex.

According to centenarians' declaration they were heavier at the age of 50. It is well documented that body weight peak is in ages 34-54 years in men and 55-66 years in women and then gradually declines with age in both sexes. This loss may be associated with a decrease of lean body mass and reduction of body water content [9].

The decline of the stature during last 50 years of centenarian's life was 0.26 cm and 0.27 cm per year, respectively. Stature is known to decrease with age due to kyphosis and shrinkage of spinal vertebrae [4]. The loss of height observed in a group of elderly by *Chumela et al.* [4] was about 0.5 cm per year between 60 to 80 years of age [9].

Table II. Characteristics of a general condition of health and life style of Warsaw centenarians by BMI (according to 4 categories for adults)

Factor		Total group (n=29)	% of total	p-value
General condition	good	6	21	NS
	relatively good	7	24	
	average	10	35	
	mean serious	5	17	
	no answer	1	3	
Past or current illness	diabetes	1	3	NS
	cancer	1	3	
	anemia	6	21	
	no answer	21	73	
Walking (n)	Yes	9	31	NS
	No	20	69	
Drinking of alcohol in the past	Yes	9	31	NS
	No	5	17	
	no answer	15	52	
Drinking of alcohol currently	Yes	13	45	0.0914*
	no answer	16	55	
Cigarette smoking	Yes	4	14	0.0152*
	No	25	86	
Physical work	Yes	17	59	
	No	12	41	

\*Kruskal-Wallis test \*\*Chi - square test

Table II presents data related to health and life style of respondents at present and in the past. The general condition of almost 80% of the centenarians was determined as good to av-

erage, which was also observed by others authors [7]. Five respondents were reported to be in poor health condition. These results indicate a generally good condition of examined people, in spite of their old age. Six individuals were anemic, two of them in young and middle age. Research on Greek centenarians showed that more than 20% remained in good health condition [15]. In the past, 5 of the examined individuals definitely did not drink alcohol. One person systematically overused alcohol and the remaining individuals drank alcohol in moderate or small amounts (20 to 100 ml) and not on regular basis. Among the drinking individuals, the biggest part (23%) drank alcohol once a week. 2 people drank twice a week and the others drank rarely. Drinking of little amounts of alcohol is considered as playing a beneficial antiarteriosclerotic role [7].

Among 4 smoking individuals (1 male and 3 females), 2 started to smoke in a young age (at 18 and 25 years old) and the remaining 2 in maturity (at 36 and 50 years). 3 people smoked during the period of the examination. The number of smoked cigarettes was low and varied between 3 to 5 cigarettes daily and only one person smoked 20 cigarettes a day. Smoking positively correlates with BMI. The smokers had a significantly higher BMI than individuals who did not smoke. Average BMI for smokers was 26.2, which indicates an overweight according to the norms for elderly. *Brasche* et al. [3] determined that smokers, particularly women, consume less energy.

Fifty nine percent of centenarians used to perform manual labor mostly (10 individuals) in agriculture. Six people performed physical labor for 1-9 years and 10 people for 25 to 72 years. Manual labor as physical activity might be the factor keeping human organism in good health and condition, what often was pointed by many scientists [6, 11].

41% of centenarians ate 4-5 or more meals a day. 9 individuals ate three meals per day and 3 people ate 2-3 meals. The number of meals eaten per day was significantly ( $p < 0.0001$ ) different before and after the age of 60. None of the persons had eaten less than 3 meals a day. Before 60 less people than now (19 vs. 14) ate 3-4 meals a day. After 60 significantly less people ate 4-5 meals a day.

Most of centenarians (76%) did not use special diet. In the past one person used therapeutic diet, 1 – protective diet and 2 people used slimming diet.

The respondents preferred sweets (28%) at present and in the past. The centenarians preferred also: soups (21%) and dairy products (10%). In the past the respondents preferred meat and cured pork products (17%), and dairy products (10%).

Table III. Regularity of meals during 3 periods of respondents' life

Meal	Before 60 n (%)			After 60 n (%)			=>100 years old n (%)		
	yes	various	no	yes	various	no	yes	Various	no
breakfast	25 (86)	0	0	25 (86)	0	1 (3)	28 (97)	0	1 (3)
lunch	7 (24)	3 (10)	11 (28)	6 (21)	6 (21)	10 (35)	10 (35)	2 (7)	13 (45)
dinner	21 (72)	3 (10)	1 (3)	25 (86)	0	1 (3)	27 (93)	0	2 (7)
afternoon meal	2 (7)	2 (7)	13 (41)	3 (10)	5 (17)	10 (35)	7 (24)	5 (17)	11 (59)
supper	22 (76)	1 (3)	2 (7)	20 (69)	2 (7)	2 (7)	24 (83)	1 (3)	3 (10)
at night	0	2 (7)	18 (62)	2 (7)	2 (7)	17 (9)	1 (3)	1 (3)	22 (76)

The data in Table III regard the regularity of meal consumption and show that centenarians eat more regularly now than in the past. The regularity of consumption of all meals was significantly ( $p < 0.0001$ ) different in 3 periods of life. Breakfast was eaten by all centenarians but one person. In the past considerably less respondents were eating between meals than at the present period of life (Table IV).

Table IV. Eating between meals

	Before 60		After 60		At present		p-value <sup>a</sup>
	n	% (% of answers)	n	% (% of answers)	n	% (% of answers)	
yes	5	17 (26)	6	20 (28)	9	31 (41)	0,0001
sometimes	3	10 (16)	8	28 (36)	5	17 (23)	
no	11	38 (58)	8	28 (36)	8	28 (36)	
no answer	10	35	7	24	7	24	

<sup>a</sup>Chi-square test

Sixteen respondents drunk 3-5 glass of soft drinks (water, mineral water, tea) and 11 (38%) drunk 5 glasses daily. According to the guidelines elderly should drink 8 glasses of water per day, but there are no guidelines for centenarians. More people ( $p < 0.0001$ ) in the age 100 drunk tea than in both periods in the past (27 people at present, 21 before and 20 after 60). Few people in 3 periods of life drunk coffee (6 at present, 7 before 60 and 8 after,  $p < 0.0001$ ). Drinking coffee was positively correlated with smoking, which was confirmed by many researchers [3]. Before 60 margarine as a bread spread was used by only one person, after 60 - 3 people and after 100 - 4 individuals. Lard was used by 10 people in the past, 4 after 60, and 1 after 100. These changes might be caused by different food products availability in the past and the change in nutrition awareness in the age of 100, since even in the young age centenarians paid attention to nutrition.

Table V. The frequency of intake of some products during 3 periods of respondents' life

Products	Before 60			After 60			At present		
	One a day	Few times a week	rarely	One a day	Few times a week	rarely	One a day	Few times a week	rarely
milk	16	1	12	17	1	11	19	3	7
yogurt	2	15	12	3	15	11	5	15	9
eggs	1	19	9	0	21	8	1	21	7
cottage cheese	12	10	7	9	11	9	13	10	6
lean meat	0	20	7	0	21	8	2	19	9
lean poultry	0	15	14	0	15	14	5	20	4
lean ham	2	13	14	5	14	10	14	9	6
poultry cold cuts	0	0	29	0	7	22	3	11	15
fish	0	10	19	0	10	19	0	16	13
fruits	14	13	2	12	12	5	18	14	2
vegetables	4	14	11	5	15	9	6	19	4
brown bread	7	4	18	6	4	19	4	3	22
sweets	16	3	10	17	2	10	22	2	5

The data presented in Table V shows that centenarians in the age of 100 more often than in the past ( $p < 0.0001$ ) ate at least once daily products of pro-health character, but they also consumed sweets. The brown bread, however, was not eaten by 22 centenarians and 18 individuals before the age of 60. Brown bread, recommended as a high nutritional value product [1], may cause distention with gas because of dietary fiber and that is why some elderly people avoid it in their diet. However, recent UK research reports indicated that substantial part of elderly changed their habits and started to consume whole-grain bread [1, 14].

## CONCLUSIONS

Physical activity, no smoking and irregular drinking of small amounts of alcohol contributed to the general good health condition of centenarians.

Centenarians in the past rarely eaten between meals, rarely ate sweets or used alternative diets. However, at present they consume less fatty products like lard, plant oils, cream and they select more high quality foods, which may be caused by the overall changes in nutritional habits of the society.

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### THE NUTRITIONAL HABITS AMONG CENTENARIANS LIVING IN WARSAW

#### Summary

The aim of the study was to determine the preferences and nutritional habits of Warsaw centenarians during their "third period" of life. The study was conducted by a questionnaire method among 29 centenarians. Most of centenarians had general good health condition. Almost 60% of centenarians performed manual labor in the past. Then they drank small amounts of alcohol irregularly. Several percent of centenarians smoked in the past. Before the age of sixty less people than at present snacked between meals. Sweets both now and in the past were preferred products, however, in the past sweets were rarely eaten by centenarians. At the present time centenarians ate more often yogurt, skim curd, fish, lean meat products, plant oils and sweets. The changes in eating habits were probably caused by civilization changes.

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### ZWYCZAJE ŻYWIENIOWE STULATKÓW MIESZKAJĄCYCH W WARSZAWIE

#### Streszczenie

Celem badań było określenie preferencji oraz zwyczajów żywieniowych stulatków w określonych trzech okresach życia. Badania przeprowadzono metodą wywiadu kwestionariuszowego wśród 29 stulatków z Warszawy. Stan ogólny większości respondentów był dobry. Prawie 60% stulatków wykonywała w przeszłości pracę fizyczną. Badani pili alkohol nieregularnie i w małych ilościach. Kilkaścian

procent badanych paliło papierosy. Mniej osób przed 60 rokiem życia, niż w okresie badania, pojadało między posiłkami. Słodycze w przeszłości i w czasie obecnym należały do produktów preferowanych przez respondentów, jednak w przeszłości były one spożywane rzadziej. W obecnym czasie, w porównaniu do przeszłości, stuletnie osoby częściej spożywały jogurty, twarogi, ryby, chude produkty mięsne, oleje roślinne oraz słodycze. Zmiany zwyczajów żywieniowych mogły być przede wszystkim spowodowane zmianami cywilizacyjnymi.

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