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***Health behaviours in a range of oral hygiene, income
and place of living of surveyed patients***

**Zachowania zdrowotne w zakresie utrzymania właściwej higieny
jamy ustnej a dochód i miejsce zamieszkania badanych pacjentów**

Key words: oral hygiene, income, place of living

Słowa kluczowe: higiena jamy ustnej, dochód, miejsce zamieszkania

INTRODUCTION

The main factors influencing hygiene of oral cavity are the frequency of tooth brushing and use of proper hygiene products, such as different types of toothpastes or mouthwashes. One's habits and lifestyle can also impact on the state of the oral cavity. Therefore maintenance of oral cavity should be performed after every meal.

Health behaviours are all intentional activities performed with purpose of sustaining and improving health status [7]. Health behaviour is an ongoing process started in early years of our life. This process is influenced by different role models, most often acquired from parents but also from playgroup, school, local or religious community and media [8]. For example knowledge about dental caries is provided to children during early school years and is being developed throughout the life.

Dental caries is classified as a social disease. The prevalence and possible health consequences of untreated caries are significant [5]. Caries occurs mostly because of improper oral hygiene. Infrequent tooth brushing or flossing causes the plaque to appear and remain on the surface of the teeth, which increases the risk of caries development. The occurrence of caries and periodontal diseases also largely depends on nutritional behaviours. By undertaking regularly simple preventive procedures, we help not only to sustain oral cavity health but also health of the entire body.

Low income may result in deterioration of oral cavity health, due to infrequent tooth brushing and infrequent dental examinations [1,10]. Increase in the prevalence of dental caries is noticed in the countries, where improvement of socio-economic status and urbanisation takes place [3].

Untreated caries may cause various organ infections and dysfunctions. Teeth with caries often cause pain, which decreases overall body mood. Prevention is better method of protecting oral health than treatment, and is also less expensive and time consuming.

Oral cavity health requires complex approach to be effective. It's necessary to put emphasis on health education, preventive care and management of the health care [11,12].

THE AIM OF RESEARCH, MATERIAL, METHODS

The aim of research was to determine patients' health behaviours in the range of oral hygiene regarding their income and place of living.

The research was conducted in 2012-2013 on 180 randomly chosen adult patients, aged between 35 and 44 years, both genders living in the area of West Pomerania region – in a big city of Szczecin (over 100.000 inhabitants), in smaller cities (under 100.000 inhabitants) and in villages. The analysis included dental examination of teeth status of patients, prevalence of caries and evaluation of oral hygiene and was conducted among patients undertaking private dental treatment or treatment reimbursed by the National Health Fund.

Clinical examination included non-invasive and secure diagnostic methods such as using WHO scale probe and dental mirror under the artificial light.

The study was based on an anonymous survey, including single and multiple choices close-ended and open-ended questions. Results of the survey allowed to evaluate patients' behaviours helping in oral disease prophylaxis and also determine socio-economic conditionings of dental health care.

Following WHO recommendation, the research determined most important socio-economic determinants of chosen groups of patients and also evaluated socio-demographic characteristics such as: gender and place of living. Socio-economic status and education – factors acknowledged as one of the socio-medical indicators of health – were subject of the research.

STATISTICAL ANALYSIS METHODS

All statistical calculations were performed with use of statistical software STATISTICA ver. 10.0 by StatSoft Inc. (2011) and Excel calculation sheet. Quantitative variables were determined by arithmetical mean, standard deviation, median, minimum and maximum (range) and 95% CI (confidence interval). Qualitative variables were determined by number and percentage. Significance of differences between two groups (independent variables model) was tested with significance test: t-Student or Mann-Whitney U test. Difference significance between more than two groups was

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tested with F (ANOVA) or Kruskal-Wallis test. Independence chi-square test was used for qualitative variables. To determine the relationship, strength and direction between variables Pearson's and/or Spearman's correlation coefficients were calculated. The level of significance $p=0.05$ was chosen for conducted study.

RESULTS

The study involved 180 patients, 90 women and 90 men, who underwent dental examination determining their teeth and oral hygiene status. Study was conducted in a big city, smaller cities and villages. Each examined person completed a questionnaire on utilization of dental services, oral hygiene and access to dental services.

Tab. I. Gender of surveyed patients

Gender	N	%
Women	90	50.0
Men	90	50.0
Sum	180	100.0

The study involved 90 women and 90 men.

Tab. II. Place of living and gender of surveyed patients

Place of living	Women		Men	
	N	%	N	%
Big city	30	33.3	30	33.3
Smaller cities	30	33.3	30	33.3
Villages	30	33.3	30	33.3
Sum	90	100.0	90	100.0

The study involved 30 women and 30 men from a big city, 30 women and 30 men from smaller cities and also 30 women and 30 men from villages.

Tab. III. Income per person in a household and gender of surveyed patients

Income	Women		Men	
	N	%	N	%
Up to 300 PLN	3	3.3	0	0.0
301-500 PLN	12	13.3	4	4.4
501-800 PLN	24	26.7	14	15.6
801-1200 PLN	22	24.4	18	20.0
More than 1200 PLN	29	32.2	54	60.0
Sum	90	100.0	90	100.0

Women and men most often indicated income of more than 1200 PLN per person in a household (respectively 29 and 54 patients).

Tab. IV. Income per person in a household and place of living of surveyed patients

Income	Big city		Smaller cities		Villages	
	N	%	N	%	N	%
Up to 300 PLN	3	5.0	0	0.0	0	0.0
301-500 PLN	6	10.0	1	1.7	9	15.0
501-800 PLN	10	16.7	13	21.7	15	25.0
801-1200 PLN	14	23.3	16	26.7	10	16.6
More than 1200 PLN	27	45.0	30	50.0	26	43.3
Sum	60	100.0	60	100.0	60	100.0

Surveyed patients most often indicated income of more than 1200 PLN per person in a household. Income of 801-1200 PLN was indicated by 40 patients and income of 501-800 PLN was indicated by 38 patients. Among surveyed patients 16 have indicated income of 301-500 PLN and 3 people have indicated income of up to 300 PLN per person in a household.

Tab. V. Frequency of brushing teeth

How often do you brush your teeth?	N	%
After every meal	30	16.8
Twice a day	116	64.8
Once a day	30	16.8
Less often than once a day	1	0.6
Sporadically	2	1.1
Sum	179	100

Majority of surveyed patients brush their teeth twice a day (64.8%).

Tab. VI. Frequency of brushing teeth in relation to gender of surveyed patients

How often do you brush your teeth?	Women		Men	
	N	%	N	%
After every meal	18	20.2	12	13.3
Twice a day	59	66.3	57	63.3
Once a day	12	13.5	18	20.0
Less often than once a day	0	0.0	1	1.1
Sporadically	0	0.0	2	2.2
Sum	89	100.0	90	100.0

Majority of both women (66.3%) and men (63.3%) brush their teeth twice a day. Women (20.2%) more often than men (13.3%) brush their teeth after every meal.

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Tab. VII. Frequency of brushing teeth in relation to place of living of surveyed patients

How often do you brush your teeth?	Big city		Smaller cities		Villages	
	N	%	N	%	N	%
After every meal	11	18.3	12	20.0	7	11.9
Twice a day	39	65.0	39	65.0	38	64.4
Once a day	9	15.0	9	15.0	12	20.3
Less often than once a day	1	1.7	0	0.0	0	0.0
Sporadically	0	0.0	0	0.0	2	3.4
Sum	60	100.0	60	100.0	59	100.0

Regardless of the place of living surveyed patients most often brush their teeth twice a day (65% of patients from a big city and smaller cities and 64.4% of patients from villages). More than 80% of patients from a big city and smaller cities brush their teeth at least twice a day. Approximately 24% of patients from villages brush their teeth once a day or less often.

Tab. VIII. Frequency of brushing teeth in relation to income per person in a household of surveyed patients

How often do you brush your teeth?	Up to 300 PLN		301-500 PLN		501-800 PLN		801-1200 PLN		More than 1200 PLN	
	N	%	N	%	N	%	N	%	N	%
After every meal	1	33.3	2	12.5	6	15.8	8	20.00	13	15.9
Twice a day	2	66.7	8	50.0	22	57.9	26	65.0	58	70.7
Once a day	0	0.0	5	31.3	10	26.3	6	15.00	9	11.0
Less often than once a day	0	0.0	0	0.0	0	0.0	0	0.0	1	1.2
Sporadically	0	0.0	1	6.3	0	0.0	0	0.0	1	1.2
Sum	3	100.0	16	100.0	38	100.0	40	100.0	82	100.0

Regardless of income surveyed patients most often brush their teeth twice a day. Among patients with income of 301-500 PLN, 31.3% of patients brush their teeth once a day and 6.3% brush their teeth sporadically.

Tab. IX. Frequency of brushing teeth in relation to place of living and gender of surveyed patients

How often do you brush your teeth?	Big city				Smaller cities				Villages			
	Women		Men		Women		Men		Women		Men	
	N	%	N	%	N	%	N	%	N	%	N	%
After every meal	4	13.3	7	23.3	9	30.0	3	10.0	5	17.2	2	6.7
Twice a day	25	83.3	14	46.7	15	50.0	24	80.0	19	65.5	19	63.3

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How often do you brush your teeth?	Big city				Smaller cities				Villages			
	Women		Men		Women		Men		Women		Men	
	N	%	N	%	N	%	N	%	N	%	N	%
Once a day	1	3.3	8	26.7	6	20.0	3	10.0	5	17.2	7	23.3
Less often than once a day	0	0.0	1	3.3	0	0.0	0	0.0	0	0.0	0	0.0
Sporadically	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	6.7
Sum	30	100.0	30	100.0	30	100.0	30	100.0	29	100.0	30	100.0

Regardless of gender and place of living surveyed patients most often brush their teeth twice a day. Women from a big city more often than women from smaller cities and villages brush their teeth twice a day or after each meal (respectively approximately 97%, 80% and 83%). Women from smaller cities and villages more often brush their teeth after every meal than men from smaller cities and villages (from smaller cities: women 30%, men 10% and from villages: women 17.2%, men 6.7%).

Tab. X. Frequency of brushing teeth in relation to income per person in a household of surveyed patients from a big city

How often do you brush your teeth?	Income of patients from a big city									
	Up to 300 PLN		301-500 PLN		501-800 PLN		801-1200 PLN		More than 1200 PLN	
	N	%	N	%	N	%	N	%	N	%
After every meal	1	33.3	0	0.0	2	20.0	4	28.6	4	14.8
Twice a day	2	66.7	5	83.3	7	70.0	8	57.1	17	63.0
Once a day	0	0.0	1	16.7	1	10.0	2	14.3	5	18.5
Less often than once a day	0	0.0	0	0.0	0	0.0	0	0.0	1	3.7
Sporadically	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Sum	3	100.0	6	100.0	10	100.0	14	100.0	27	100.0

Regardless of income surveyed patients from a big city most often brush their teeth twice a day. Patients with income of up to 300 PLN and 801-1200 PLN most often of all patients brush their teeth after every meal (respectively 33.3% and 28.6%).

Tab. XI. Frequency of brushing teeth in relation to income per person in a household of surveyed patients from smaller cities

How often do you brush your teeth?	Income of patients from smaller cities									
	Up to 300 PLN		301-500 PLN		501-800 PLN		801-1200 PLN		More than 1200 PLN	
	N	%	N	%	N	%	N	%	N	%
After every meal	0	-	0	0.0	0	0.0	4	25.0	8	26.7
Twice a day	0	-	0	0.0	7	53.8	11	68.8	21	70.0
Once a day	0	-	1	100.0	6	46.2	1	6.3	1	3.3

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How often do you brush your teeth?	Income of patients from smaller cities									
	Up to 300 PLN		301-500 PLN		501-800 PLN		801-1200 PLN		More than 1200 PLN	
	N	%	N	%	N	%	N	%	N	%
Less often than once a day	0	-	0	0.0	0	0.0	0	0.0	0	0.0
Sporadically	0	-	0	0.0	0	0.0	0	0.0	0	0.0
Sum	0	-	1	100.0	13	100.0	16	100.0	30	100.0

Regardless of income surveyed patients from smaller cities most often brush their teeth twice a day.

Tab. XII. Frequency of brushing teeth in relation to income per person in a household of surveyed patients from villages

How often do you brush your teeth?	Income of patients from villages									
	Up to 300 PLN		301-500 PLN		501-800 PLN		801-1200 PLN		More than 1200 PLN	
	N	%	N	%	N	%	N	%	N	%
After every meal	0	-	2	22.2	4	26.7	0	0.0	1	4.0
Twice a day	0	-	3	33.3	8	53.3	7	70.0	20	80.0
Once a day	0	-	3	33.3	3	20.0	3	30.0	3	12.0
Less often than once a day	0	-	0	0.0	0	0.0	0	0.0	0	0.0
Sporadically	0	-	1	11.1	0	0.0	0	0.0	1	4.0
Sum	0	-	9	100.0	15	100.0	10	100.0	25	100.0

Patients from villages with income of more than 1200 PLN most often of all patients brush their teeth twice a day (80.0%). Patients with income 501-800 PLN most often of all patients brush their teeth after every meal (26.7%).

Tab. XIII. Use of dental hygiene products in relation to place of living and gender of surveyed patients

What oral hygiene products do you use?	Big city				Smaller cities				Villages			
	Women		Men		Women		Men		Women		Men	
	N	%	N	%	N	%	N	%	N	%	N	%
Traditional toothbrush	25	83.3	24	80.0	27	90.0	26	86.7	26	86.7	28	93.3
Electric toothbrush	3	10.0	8	26.7	3	10.0	7	23.3	3	10.0	2	6.7
Interdental toothbrush	0	0.0	1	3.3	5	16.7	0	0.0	0	0.0	0	0.0
Dental floss	15	50.0	15	50.0	15	50.0	9	30.0	11	36.7	7	23.3
Toothpicks	4	13.3	5	16.7	9	30.0	11	36.7	5	16.7	9	30.0
Fluoride toothpaste	10	33.3	17	56.7	19	63.3	24	80.0	15	50.0	16	53.3
Specific type toothpaste	17	56.7	8	26.7	15	50.0	7	23.3	11	36.7	6	20.0
Mouthwash	17	56.7	20	66.7	14	46.7	20	66.7	11	36.7	12	40.0
Number of people in a group	30		30		30		30		30		30	

**surveyed patients were able to select many answers, values do not sum up to 100%*

Women from a big city (83.3%) and smaller cities (90.0%) more often than men (respectively 80.0% and 86.7%) use traditional toothbrush. Men regardless of their place of living more often than women use electric toothbrush, mouthwash and fluoride toothpaste.

Tab. XIV. Use of dental hygiene products in relation to income per person in a household of surveyed patients

What oral hygiene products do you use?	Up to 300 PLN		301-501 PLN		501-800 PLN		801-1200 PLN		More than 1200 PLN	
	N	%	N	%	N	%	N	%	N	%
Traditional toothbrush	2	66.7	16	100.0	38	100.0	35	87.5	65	78.3
Electric toothbrush	0	0.0	0	0.0	0	0.0	3	7.5	23	27.7
Interdental toothbrush	0	0.0	0	0.0	0	0.0	4	10.0	2	2.4
Dental floss	0	0.0	2	12.5	14	36.8	17	42.5	39	47.0
Toothpicks	1	33.3	3	18.8	8	21.1	11	27.5	20	24.1
Fluoride toothpaste	0	0.0	10	62.5	24	63.2	19	47.5	48	57.8
Specific type toothpaste	3	100.0	5	31.3	8	21.1	17	42.5	31	37.4
Mouthwash	2	66.7	3	18.8	15	39.5	22	55.0	52	62.7
Number of people in a group	3		16		38		40		83	

*surveyed patients were able to select many answers, values do not sum up to 100%

Patients with income of 801-1200 PLN and more than 1200 PLN most often used various dental hygiene products, such as electric toothbrush, specific type toothpaste, mouthwash or dental floss.

DISCUSSION

Health behaviours are defined as all intentional activities performed by a person, which purpose is to sustain or increase health potential [7]. According to Piwoński and Pytlak health behaviour is developed already in the earliest years of life. This process occurs under the influence of different role models taken from home, play-group, school, local or religious community, and media [8]. The intensity of dental carries is definitely higher in developing countries, to which Poland is classified, than in highly developed countries [4].

Klichowska-Palotka et al. obtained the results which showed that most respondents – 46.5% - brush teeth twice a day, 41.4% - once a day and 12.1% - after every meal [6]. In the study conducted by Bałczewska 18.2% of surveyed patients brushed their teeth 3 times a day, 60.9% - twice a day, 10.9% - once a day and only 2.2% of respondents do not brush their teeth at all [2].

The results obtained in research are similar – 16.8% of patients brush their teeth after every meal, 64.8% brush their teeth twice a day, 16.8% brush teeth once a day and 1.7% of surveyed patients brush their teeth less often than once a day.

Differentiation between socio-economic status of cities and villages inhabitants have significant influence on health behaviours in range of oral cavity hygiene [9].

Carried out research showed that regardless of place of living, majority of patients brush their teeth twice a day. Patients from villages less often than patients from smaller cities and big city brush their teeth after every meal.

In her studies Bałczewska proved that the primary utensil used to sustain health of the oral cavity was a traditional toothbrush (94.8% of answers) and toothpaste – 81.8% of answers. Other questionnaires mentioned: using mouthwash – 26.1% of answers, toothpicks – 14,6% of answers, 13.9% - dental floss and 4.6% used complete hygiene kits [2].

The study showed that women from a big city (83.3%) and smaller cities (90.0%) more often than men (respectively 80.0% and 86.7%) use traditional toothbrush. Men more often than women use electric toothbrush, mouthwash and fluoride toothpaste.

CONCLUSIONS

Following conclusions were drawn from the study:

1. The vast majority of surveyed patients brush their teeth twice a day.
2. Women more often than men brush their teeth twice a day or after every meal. Only among men there are patients who brush their teeth less often than once a day.
3. Regardless of the place of living and income surveyed patients most often brush their teeth twice a day.
4. Patients from villages less often than other patients brush their teeth twice a day or after every meal.
5. The higher the income of patients the more advanced hygiene products they use.

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ABSTRACT

The aim of research was to determine patients' health behaviours in the range of oral hygiene regarding their income and place of living. Study included 180 patients, 90 women and 90 men, aged 35-44 from a big city, smaller cities and villages of West Pomerania region. Dental examination was performed, which allowed to evaluate oral health state. Questionnaire including utilization of dental services, oral hygiene and access to dental services was completed by patients. Vast majority of women and men brush their teeth twice a day, however women more often than men brush their teeth after every meal. Regardless of the place of living and income surveyed patients most often brush their teeth twice a day. Patients with higher income utilize various advanced dental products.

STRESZCZENIE

Celem pracy było zbadanie zachowań pacjentów w zakresie utrzymania higieny jamy ustnej z uwzględnieniem ich dochodu i miejsca zamieszkania. Grupę badawczą stanowiło 180 pacjentów, 90 kobiet i 90 mężczyzn w wieku 35-44 lata z dużego miasta, małych miejscowości i wsi województwa zachodniopomorskiego. Przeprowadzono lekarskie badanie stomatologiczne, które pozwoliło określić stan zdrowia jamy ustnej pacjentów oraz badanie ankietowe dotyczące między innymi korzystania przez pacjentów ze świadczeń stomatologicznych, higieny jamy ustnej, dostępu do opieki stomatologicznej. Zdecydowana większość kobiet i mężczyzn myje zęby dwa razy dziennie, jednak kobiety częściej niż mężczyźni myją zęby po każdym posiłku. Niezależnie od miejsca zamieszkania i dochodu, pacjenci najczęściej myją zęby dwa razy dziennie. Pacjenci z wyższym dochodem korzystają z różnorodnych specjalistycznych produktów higienicznych.

Artykuł zawiera 20 069 znaków ze spacjami