

# Analysis of eating and drinking habits of young people and the correlation of these activities with cervical dental pathology

## Analiza nawyków żywieniowych i picia u młodych ludzi oraz ich związek z patologią zmian przyszyjkowych

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### KEY WORDS:

dental caries, dietary habits, erosion, non-carious cervical lesions

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### HASŁA INDEKSOWE:

próchnica zębów, nawyki żywieniowe, erozja, niepróchnicowe zmiany przyszyjkowe

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### Summary

**Introduction.** The condition of hard dental tissues is closely associated with patients' dietary habits.

**Aim of the study.** To identify the prevalence and the average daily number of dietary episodes in young patients with further analysis of their correlation with cervical dental lesions.

**Material and methods.** The study involved 272 patients (24.3±6.9 years) who were fully examined with the aim of diagnosing cervical dental pathology. The information about the prevalence and the average daily number of patients' eating and drinking episodes was entered into a specially developed survey/questionnaire.

**Results.** The development of a wedge-shaped defect had a direct correlation with intake of tangerines and coffee, and inverse correlation – with intake of bananas and green tea. The number of a patient's wedge-shaped defects depended on the average number of glasses of Fanta drunk daily, their depth on the number of cups of coffee and consumed yoghurt tubs. A correlation was

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### Streszczenie

**Wstęp.** Stan twardych tkanek zębów jest ściśle powiązany z nawykami żywieniowymi pacjentów.

**Cel pracy.** Identyfikacja rozpowszechnienia i średniej dziennej liczby zdarzeń żywieniowych u młodych pacjentów oraz dalsza analiza ich związku ze zmianami przyszyjkowymi.

**Material i metody.** Do badania włączono 272 pacjentów (24,3±6,9 lat), których poddano pełnemu badaniu w celu diagnostyki patologii zmian przyszyjkowych. Informacje o rozpowszechnieniu i średniej dziennej liczbie zdarzeń żywieniowych pacjentów wprowadzono do specjalnie opracowanej ankiety/kwestionariusza.

**Wyniki.** Rozwój ubytków klinowych korelował bezpośrednio ze spożyciem mandarynek i kawy oraz odwrotnie – ze spożyciem bananów i zielonej herbaty. Liczba klinowatych defektów u pacjenta zależała od średniej dziennej liczby wypijanych szklanek Fanty, ich głębokość od liczby wypitych filiżanek kawy i spożytych kubeczków jogurtowych. Określono korelację pomiędzy głębokością erozji szkliwa a średnią dzienną liczbą spożywa-

determined between the depth of enamel erosion and the average daily number of consumed lemons, bananas, and simultaneous intake of kiwis and bananas. The correlation was observed between the development of cervical caries and intake of acidic foods and tea with lemon, chocolate. The number of cervical caries in a patient depended on the average daily number of consumed acidic foods and drunk cups of coffee. There was a direct correlation between the development of combined forms of cervical dental lesions and intake of chips.

**Conclusions.** We recommend to take into consideration the determined correlations when planning individual treatment and preventive measures, especially in young patients.

nych cytryn, bananów i jednoczesnym spożyciem kiwi i bananów. Zaobserwowano korelację pomiędzy rozwojem próchnicy przyszyjkowej a spożyciem kwaśnych pokarmów oraz herbaty z cytryną i czekolady. Liczba próchnicowych ubytków przyszyjkowych u pacjenta zależała od średniej dziennej liczby spożywanych kwaśnych pokarmów oraz wypijanych filiżanek kawy. Wykazano bezpośrednią korelację pomiędzy występowaniem złożonych postaci przyszyjkowych uszkodzeń zębów a spożyciem frytek.

**Wnioski.** Zaleca się uwzględnienie ustalonych w pracy związków przy planowaniu indywidualnego leczenia i działań profilaktycznych, zwłaszcza u młodych pacjentów.

## Introduction

Dental caries is patients' main reason to see a dentist. The second most common pathology after caries is non-carious cervical lesions of teeth (NCCL).<sup>1,2</sup> According to Carlo et al. and Mamaladze et al.,<sup>3,4</sup> erosion (E) and cervical caries (CC) of teeth are more often diagnosed in the age group after reaching the age of thirty years. Erosive tooth wear prevails among young people while more than half of people are at risk of its development in all age groups.<sup>5,6</sup> Cervical pathology disturbs the aesthetics and functioning of teeth, reduces the quality of patients' life, therefore, determining its etiological factors can improve the impact on clinical complaints, increase the effectiveness of restorative treatment and help to prevent the development of combined forms.<sup>1,2,7</sup>

Probably, the significant prevalence of cervical dental lesions is associated with the multifactorial nature of their etiology, changes in lifestyle and diet, food behaviour, habits and young age.<sup>8-15</sup> So, according to Nascimento et al.,<sup>7</sup> the interaction between chemical, biological and behavioral factors is

of decisive importance, and it explains why some patients have several mechanisms of cervical tooth wear. Today scientists consider dietary habits to be a factor able to change the course of caries and tooth E that are the main consequences of demineralization.<sup>13</sup> Demineralized areas of structural weakness also become the centers for the formation of dental caries.<sup>12</sup> Perhaps, the peculiarities of the diet can affect the development of other cervical dental lesions.

A significant number of dietary habits provide a source of exogenous acid and it acts as a leading etiological factor for NCCL.<sup>1,11,14,16,17</sup> According to data,<sup>3,6,11,17</sup> acidic foods and drinks are risk factors for erosive tooth wear of hard dental tissues. Citruses and other fruit as well as fruit juices contain citric acid while carbonated soft drinks and wine contain carbonic acid and other acids.<sup>7</sup> There are also such exogenous sources of acids as alcoholic cocktails, some vegetables and sweets.<sup>1,8,12,13,18-20</sup> Excessive intake of acidic foods and drinks causes biocorrosion and it becomes an increasingly common phenomenon.<sup>7,11,21</sup> It is known that

intake of soft or fruit drinks makes up more than half of all liquids in developed countries.<sup>22</sup> Every year the number of people consuming acidic foods and drinks more than five times a day increases.<sup>19</sup> The opinion that episodic dietary habits cannot result in any damage to hard dental tissues is wrong.<sup>22</sup> According to *Abou Neel et al.*,<sup>12</sup> intake of acidic drinks may cause an increase in the prevalence of dental pathology in the next five years. So, preventive measures minimizing the effect of potentially dangerous factors are justified especially before the initiation of restorative treatment.<sup>7,23</sup> In this regard, dietary habits should be carefully considered and specified.<sup>16</sup>

The aim of the study is to identify the prevalence and the average daily number of eating and drinking episodes in young patients; to reveal possible correlations between dietary habits and cervical lesions of hard dental tissues (wedge-shaped defect (WSD), E, CC and their combined forms).

## Materials and Methods

### *Inclusion and exclusion criteria*

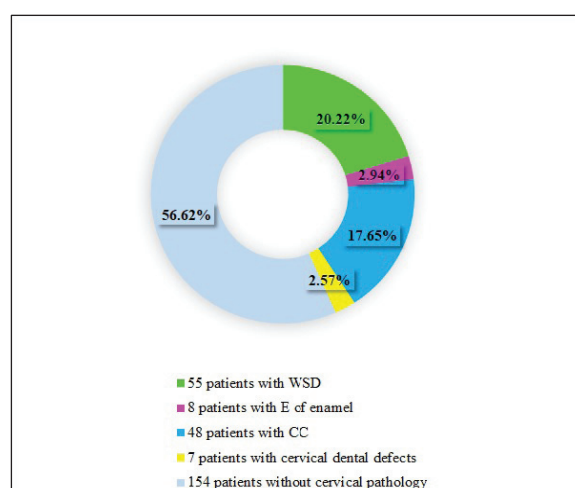
The study involved 272 patients (174 women and 98 men) aged 18-44 years (average age  $24.3 \pm 6.9$  years). Due to the classification of the World Health Organization (WHO) (2017) there were such qualifying criteria as young age, absence of harmful habits, pregnancy and postpartum period, neoplasms. Before the study all the participants were provided with a written informed consent to be signed.

The study was performed using the principles of WMA Declaration of Helsinki Ethical Principles for Medical Research Involving Human Objects as amended in 2013, Order No. 690 of the Ministry of Health of Ukraine (dated September 23, 2009) and approved by the Bioethics Committee (N° 43, dated January 21, 2021).

### *Clinical procedure and study outcomes*

A practitioner-dentist carried out a clinical examination of hard dental tissues for the presence of NCCL and CC. The diagnosis of NCCL was made in accordance with the Tooth Wear Index (TWI) by B.G. Smith, J.K. Knight based on William's periodontal probe (Trinity®).<sup>7</sup> NCCL was classified according to morphology (WSD and E). Caries marker Izumrud (Latus, Ukraine) was used to make a diagnosis of CC.

Cervical dental lesions were diagnosed in 43.4% of the examined patients (72 women (41.4%) and 46 men (46.9%)).<sup>24</sup> Based on the presence and type of cervical pathology the distribution of patients is presented in Fig. 1.



**Fig. 1. Distribution of patients according to the results of clinical examination.**

All erosive defects were within the enamel. Seven people had the combination of cervical pathology: 5 cases - E with WSD, 2 cases - E with CC.<sup>24</sup> Taking into account the results of the clinical examination, all patients were divided into five groups: I – with WSD, II – with E of enamel, III – with CC, IV – with a combination of cervical dental defects, V – without any cervical pathology. There was no difference in patients' age depending on the study group ( $p > 0.05$ ).<sup>24</sup>

The patients filled in the survey/questionnaire where there were questions about eating and drinking habits and their average daily intake. The list of dietary habits in the survey/questionnaire corresponded to the region of residence and socio-economic characteristics of the examined patients. The average daily number of dietary episodes was determined in units of measurement: for sour dishes, sweets, fruits - in pieces; for crisps – in bags, for chocolate – in bars, for yoghurt – in tubs; for juice, milk, wine, sparkling water and soft drinks – in glasses, for tea and coffee – in cups.

### Statistical Analysis

Statistical analysis was carried out with the help of Statistical Package for the Social Sciences Statistics version 12.0 (3BA94C4ED07A) software for Windows (IBM corp., Armonk, NY, USA). The G\*Power program was used

to calculate the sample size. We calculated Student's t-test to compare average values in normally distributed patients. The differences were considered statistically significant at  $p \leq 0.05$ . Based on Pearson's  $\chi^2$  test we compared nominal findings. When the number of expected trials was less than 5 we applied Fisher's test to assess the level of significance of differences.

## Results

### Study of prevalence of dietary habits

The prevalence of eating and drinking habits among the examined patients was identified and their features were analysed depending on the study group (Tables 1-3, Fig. 2-4).

The presence of dietary habits did not depend on the patients' age or gender ( $p > 0.05$ ). The examined patients of group III consumed sour dishes 1.6 times less often compared to the examined patients of group V ( $\chi^2 = 7.219$ ,

Table 1. Prevalence of eating habits among the examined patients depending on the presence and type of cervical dental pathology (abs./%)

Eating habits	Gender	Total by gender (abs./% of the total number of patients of this gender)	Groups (abs./% of the total number of patients in the group)				
			I	II	III	IV	V
Sour dishes	m	43/44.3	9/16.4	1/12.5	14/29.2	1/14.3	18/11.7
	f	78/44.6	17/30.9	3/37.5	15/31.3	2/28.6	41/26.6
Crisps	m	7/7.2	1/1.8	0/0	1/2.1	0/0	5/3.2
	f	11/6.3	3/5.5	1/12.5	0/0	0/0	7/4.5
Sweets	m	39/40.2	9/16.4	0/0	11/22.9	0/0	19/12.3
	f	117/66.9	23/41.8	3/37.5	16/33.3	5/71.4	70/45.5
Chocolate	m	26/26.8	5/9.1	1/12.5	4/8.3	0/0	16/10.4
	f	66/37.7	17/30.9	0/0	5/10.4	2/28.6	42/27.3
Yoghurt	m	11/11.3	2/3.6	0/0	21/43.8	0/0	7/4.5
	f	43/24.6	6/10.9	2/25.0	9/18.8	3/42.3	23/14.9

f – female, m – male.

Table 2. Prevalence of habits of eating fruits among the examined patients depending on the presence and type of cervical dental pathology (abs./%)

Habits of consuming fruits	Gender	Total by gender (abs./% of the total number of patients of this gender)	Groups (abs./% of the total number of patients in the group)				
			I	II	III	IV	V
Lemons	m	15/15.5	4/7.3	0/0	2/4.2	0/0	9/5.8
	f	21/12.0	6/10.9	1/12.5	2/4.2	0/0	12/7.8
Oranges	m	25/25.8	7/12.7	1/12.5	6/12.5	1/14.3	10/6.5
	f	52/29.7	7/12.7	2/25.0	9/18.8	1/14.3	33/21.4
Grapefruits	m	5/5.2	2/3.6	0/0	0/0	0/0	3/1.9
	f	15/8.6	5/9.1	0/0	2/4.2	0/0	8/5.2
Tangerines	m	9/9.3	2/3.6	0/0	5/10.4	0/0	2/1.3
	f	18/10.3	8/14.5	0/0	3/6.3	0/0	7/4.5
Apples	m	67/69.1	14/25.5	1/12.5	13/27.1	1/14.3	38/24.7
	f	117/66.8	24/43.6	3/37.5	16/33.3	4/57.1	70/45.5
Bananas	m	48/49.5	8/14.5	1/12.5	5/10.4	1/14.3	33/21.4
	f	94/53.7	13/23.6	3/37.5	14/29.2	3/42.3	61/39.6
Kiwis	m	2/2.1	1/1.8	0/0	0/0	0/0	1/0.6
	f	11/6.3	0/0	0/0	1/2.1	1/14.3	9/5.8

f – female, m – male.

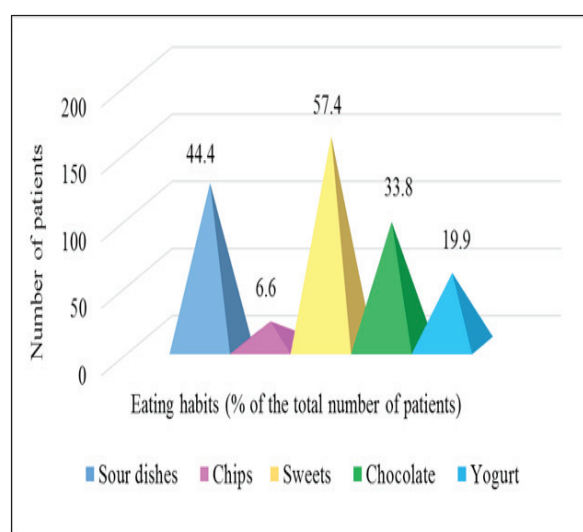


Fig. 2. Distribution of eating habits among the examined patients.

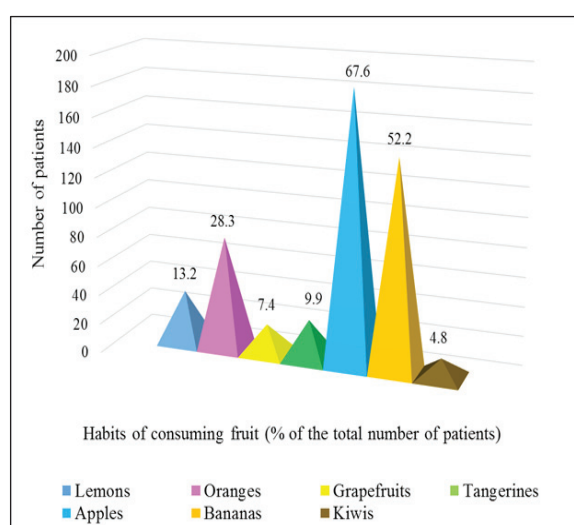


Fig. 3. Distribution of habits of consuming fruits among the examined patients.



Table 3. Prevalence of drinking habits among the examined patients depending on the presence and type of cervical dental pathology (abs./%)

Drinking habits	Gender	Total by gender (abs./% of the total number of patients of this gender)	Groups (abs./% of the total number of patients in the group)				
			I	II	III	IV	V
Fruit juice	m	33/33.7	7/12.7	1/12.5	6/12.5	0/0	19/12.3
	f	56/32.2	8/14.5	3/37.5	7/14.6	2/28.6	36/23.4
Milk	m	44/43.9	9/16.4	1/12.5	11/22.9	1/14.3	22/14.3
	f	52/29.9	8/14.5	2/25.0	7/14.6	3/42.3	32/20.8
Dry wine	m	4/4.1	2/3.6	0/0	1/2.1	0/0	1/0.6
	f	11/6.3	2/3.6	1/12.5	0/0	0/0	8/5.2
Coffee	m	58/59.8	17/30.9	1/12.5	11/22.9	1/14.3	28/18.2
	f	107/39.0	26/47.3	4/50.0	13/27.1	4/57.1	60/39.0
Black Tea	m	67/69.1	16/29.1	2/25.0	12/25.0	0/0	37/24.0
	f	93/53.4	16/29.1	6/75.0	17/35.4	2/28.6	52/33.8
Green tea	m	24/24.7	3/5.5	0/0	8/16.7	0/0	13/8.4
	f	94/53.7	19/34.5	2/25.0	15/31.3	3/42.3	58/37.7
Tea with lemon	m	17/17.5	4/7.3	0/0	2/4.2	0/0	11/7.1
	f	35/20.0	8/14.5	2/25.0	2/4.2	2/28.6	21/13.6
Sparkling water	m	38/39.2	10/18.2	1/12.5	9/18.8	1/14.3	17/11.0
	f	43/24.6	10/18.2	2/25.0	3/6.3	1/14.3	27/17.5
Carbonated soft drinks	m	31/32.0	7/12.7	1/12.5	6/12.5	0/0	1/0.6
	f	22/12.5	5/9.1	1/12.5	5/10.4	1/14.3	0/0

f – female, m – male.

$p=0.008$ ). The patients with CC also consumed chocolate 1.06 times less often than the patients with WSD ( $\chi^2=4.365$ ,  $p=0.037$ ) and 2.01 times less often than the patients without cervical lesions ( $\chi^2=5.299$ ,  $p=0.022$ ). The examined patients with clinically intact teeth consumed bananas 1.6 times more often compared to the patients with WSD ( $\chi^2=7.726$ ,  $p=0.006$ ) and 1.22 times more often compared to the patients with CC ( $\chi^2=6.777$ ,  $p=0.01$ ). The patients with WSD who consumed tangerines were in 3.14

times more defects than the patients without diagnosed cervical lesions ( $\chi^2=6.251$ ,  $p=0.013$ ).

The group “Carbonated soft drinks” combined such popular drinks as Coca-Cola, Pepsi, Sprite, Fanta in the diet of the examined patients (Table 3-4, Fig. 4-5).

Group I had more patients who drank coffee, namely, 3.88 times more compared to the patients in group V ( $\chi^2=7.031$ ,  $p=0.009$ ) and 1.8 times more compared to the patients in group III ( $\chi^2=7.339$ ,  $p=0.007$ ). The number

Table 4. The average daily number of drinking episodes in units of measurement in the examined patients depending on the presence and type of cervical dental pathology (M±m)

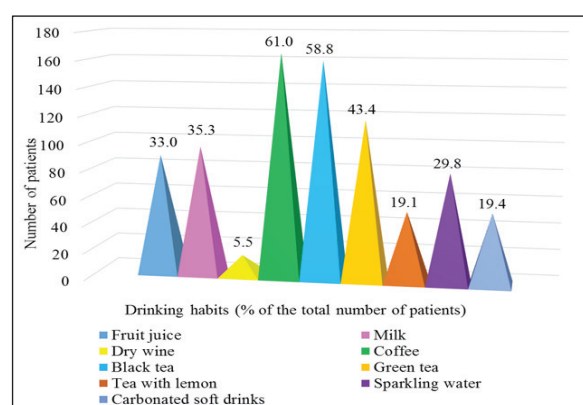
Drinking episodes	Averages (N=272)	Groups				
		I	II	III	IV	V
Fruit juice	1.44±0.98	1.28±0.9	1.75±1.5	1.78±1.39	2.5±0.71	1.34±0.83
Milk	1.06±0.83	1.02±0.9	1.17±0.76	1.17±0.99	1.5±1.32	0.97±0.68
Dry wine	0.35±0.27	0.24±0.19	0.5±0.0	0.1±0.0	–	0.42±0.3
Coffee	2.0±1.4	1.98±1.33	1.81±1.07	1.84±1.19	4.33±2.31	1.98±1.44
Black Tea	2.07±1.29	2.09±1.3	2.51±1.89	2.16±1.23	2.33±2.08	1.97±1.26
Green tea	1.87±1.34	1.93±1.28	0.5±0.0	1.87±1.02	2.33±0.58	1.87±1.47
Sparkling water	2.39±1.77	2.01±1.44	2.17±2.02	2.67±2.31	3.75±3.18	2.44±1.72
Carbonated soft drinks	0.98±0.63	1.2±0.3	0.4±0.6	0.37±1.0	0.36±1.2	0.96±0.42

Table 5. The average daily number of eating episodes in units of measurement in the examined patients depending on the presence and type of cervical dental pathology (M±m)

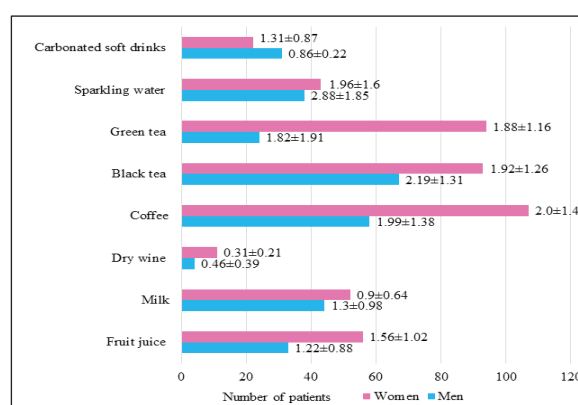
Eating episodes in units of measurement	Averages (N=272)	Groups				
		I	II	III	IV	V
Sour dishes	0.59±0.37	0.57±0.32	0.67±0.24	0.49±0.3	0.83±0.29	0.63±0.42
Crisps	0.52±0.68	0.2±0.08	3.0±0.0	0.2±0.0	–	0.45±0.33
Sweets	3.4±2.83	3.14±2.42	1.23±0.68	3.45±3.21	3.8±1.79	3.52±2.94
Chocolate	0.55±0.44	0.37±0.21	0.3±0.0	0.43±0.35	0.5±0.0	0.65±0.49
Yoghurt	0.81±0.49	2.5±1.04	1.0±0.0	0.55±0.31	0.57±0.4	0.83±0.42
Lemons	0.45±0.36	0.25±0.29	0.5±0.0	0.65±0.44	–	0.51±0.35
Oranges	1.01±0.67	1.01±0.69	0.92±0.95	0.79±0.48	1.0±0.0	1.09±0.71
Grapefruits	0.66±0.37	0.56±0.33	–	0.6±0.57	–	0.74±0.38
Tangerines	1.36±0.85	1.45±0.92	–	1.04±0.20	–	1.56±1.10
Apples	1.72±1.14	1.61±1.11	1.25±0.50	1.57±0.79	2.1±0.89	1.8±1.26
Bananas	1.16±0.66	1.06±0.57	0.87±0.25	1.27±0.77	1.87±0.85	1.14±0.65
Kiwis	1.7±1.7	1.2±0.0	–	5.0±0.0	1.0±0.0	1.5±1.58

of examined patients with CC who drank tea with lemon were less: in 3 times compared to number of the patients with WSD ( $\chi^2=4.365$ ,  $p=0.037$ ) and in 8 times compared to number of

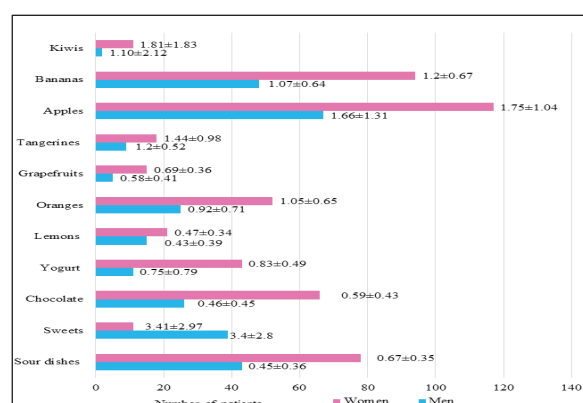
patients with clinically intact teeth ( $\chi^2=7.342$ ,  $p=0.007$ ). There were significantly fewer patients who drank Fanta in group III compared to the patients of group I ( $\chi^2=4.365$ ,  $p=0.037$ ).



**Fig. 4. Distribution of drinking habits among the examined patients.**



**Fig. 5. Average daily number of drinking episodes in units of measurement in the examined patients (M±m).**



**Fig. 6. Average daily number of eating episodes in units of measurement in the examined patients (M±m).**

The examined patients with CC drank sparkling water 3.6 times less often compared to the patients without diagnosed cervical dental lesions ( $\chi^2=6.309$ ,  $p=0.013$ ).

#### *Study of the average daily number of dietary episodes*

It was determined that the average quantitative indicators of dietary habits did not depend on the age or gender of the examined patients and they did not affect the number of cervical lesions that they had ( $p>0.05$ ) (Tab. 4-5, Fig. 5-6).

During the day the patients with enamel E consumed crisps 15.0 and 6.67 times more often than the patients with WSD and clinically intact teeth (respectively,  $t=35.0$  and  $t=0.73$ ,

$p<0.001$ ). The research groups did not differ in the average daily number of drinking episodes ( $p>0.05$ ).

#### *Study of the correlation of dietary habits with cervical pathology of teeth*

The development of WSD was in a direct weak correlation with the intake of tangerines and coffee ( $\chi^2=3.911$ ,  $p=0.048$  and  $\chi^2=8.263$ ,  $p=0.005$ , respectively), in an inverse weak correlation with the intake of bananas and green tea ( $\chi^2=4.597$ ,  $p=0.033$  and  $\chi^2=7.094$ ,  $p=0.008$ , respectively) (Table 2-3). A direct weak correlation was observed between the number of patients with WSD and the average daily number of glasses of Fanta ( $\chi^2=3.956$ ,  $p=0.047$ ) (Table 4). There was an inverse weak correlation between the depth of WSD and the average daily number of cups of coffee ( $\chi^2=8.388$ ,  $p=0.004$ ) and consumed yoghurt tubs ( $\chi^2=3.951$ ,  $p=0.047$ ) (Table 4-5). The correlation was identified between the depth of enamel E and the number of consumed lemons, bananas, simultaneous intake of kiwis and bananas ( $\chi^2=4.286$ ,  $p=0.039$ ) (Table 5). A weak correlation was observed between the development of CC and the intake of acidic foods and tea with lemon (direct -  $\chi^2=5.971$ ,  $p=0.015$  and  $\chi^2=6.758$ ,  $p=0.01$ , respectively), chocolate (inverse -  $\chi^2=5.23$ ,  $p=0.023$ ) (Table



1, 3). There was a direct correlation between the number of CC in the patient and the number of consumed acidic dishes ( $\chi^2=4.739$ ,  $p=0.003$ ) (medium strength) and inverse correlation - the number of cups of coffee ( $\chi^2=4.857$ ,  $p=0.028$ ) (Table 4-5). There was a direct correlation between the development of combined forms of cervical dental lesions and intake of crisps ( $\chi^2=8.69$ ,  $p=0.004$ ) (Table 1).

## Discussion

The analysis of the results of the study showed that the dietary habit of consuming some fruits was associated with the development and progression of NCCL. Probably it explains the fact that the greatest loss of hard dental tissues during erosive wear occurs under the influence of citric acid contained in citrus and other fruits.<sup>7,25</sup> According to Kantorowicz et al.,<sup>13</sup> caries rarely occurs in people who eat fruit every day. Further research is necessary to study a determined potential positive effect of the dietary habit of eating bananas on hard dental tissues.

The correlation between the development and the number of CC and intake of acidic foods was observed. Probably, exogenous acids contribute to the development of favourable conditions for increasing the number of cariogenic microorganisms in the oral cavity. It is known that intake of crisps contributes to the development of dental caries.<sup>13</sup> The authors revealed a correlation between their intake and the development of combined forms of cervical dental pathology. It was also identified that the patients with enamel E consumed more crisps during the day.

The conducted research revealed an inverse correlation between the depth of WSD and the average daily number of consumed yoghurt tubs. There are studies that describe an inverse correlation between the consumption of yoghurt products and milk and the incidence

of erosive tooth wear.<sup>18</sup> But there are also other studies saying that the intake of fruit yoghurts contributed to the development of E in children.<sup>26</sup> Contradictory results are probably related to the content of yoghurt, in particular the content of calcium and phosphate, as well as the difference in patients' age.<sup>16</sup>

In our opinion, the obtained results concerning the intake of coffee by the examined patients are interesting. According to Manno et al.,<sup>27</sup> coffee causes decalcification of teeth exposing dentine structure that is probably one of the reasons for the development of common symptoms of dentine hypersensitivity in patients with cervical dental pathology.<sup>24</sup> The determined inverse correlation between the depth of WSD and the number of CCs in the patient and the average daily number of drunk cups of coffee seems to be contradictory. Perhaps, while analysing this dietary habit not all factors were taken into account, for example, having coffee with milk that has a protective potential.<sup>18</sup>

A correlation was revealed between the development and the number of WSDs and the dietary habit of drinking Fanta. The authors did not come across any information in the literature sources on the study about that habit in the patients with cervical dental pathology, so there is no comparison of the obtained results. To reduce the risk of losing erosive tooth substance it is recommended to maintain the minimum permissible temperature for erosive drinks.<sup>25</sup> Probably, in addition to carbonated soft drinks, sparkling water is also dangerous for hard dental tissues. Further analysis is necessary to study a determined potentially positive effect of the dietary habits of drinking green tea and consuming chocolate on hard dental tissues.

The conducted study showed that not all dietary habits from the survey/questionnaire had a correlation with cervical dental pathology. Other scientists proved that no acid exposure was reliably associated with the progression of erosive tooth wear.<sup>17,28,29</sup> There are also known

studies that did not reveal any significant correlations between the development of E and WSD and dietary habits.<sup>19</sup> According to Ramsay et al. and Alvarez-Arenal et al.,<sup>15,30</sup> the peculiarities of the diet only partly explain the cases of the development of cervical dental pathology. It is probably due to other various changes that influence them. For example, it is a fact that teeth develop high resistance to local demineralization.<sup>12</sup> In this regard, a significant role is given to the properties of oral fluid. Individual differences in salivary factors and/or the composition of enamel and dentine may also change the correlation between nutrition and tooth wear.<sup>15</sup> According to Ramsay et al.,<sup>15</sup> the following factors such as the amount of acid, the duration and frequency of exposure, as well as the behavioral style of consuming acid-containing products play a significant role. Whether acids will lead to erosive demineralization of hard dental tissues also depends on the degree of their actual Ph.<sup>21</sup> But there is another opinion that the erosive potential of an acidic food product depends on titratability but not on Ph. Higher titratability and lower Ph have a higher erosive potential.<sup>20</sup> Therefore, it is recommended to reduce the frequency of intake and contact time of erosive foods/drinks with the teeth, use a straw and consume dairy products.<sup>31</sup>

Thus, the conducted study confirmed the researchers' opinion about the multifactorial etiology of cervical dental lesions.<sup>30</sup> But several etiological factors are involved in the development of each clinical form of pathology, one of which prevails.<sup>32</sup> Therefore, timely diagnosis of each type of cervical dental lesion is necessary for the implementation of specific preventive measures.<sup>33</sup> In this regard, an in-depth anamnesis is of great importance.

#### *Limitation of the study*

To begin with, women made up 64% of the examined patients; then, young patients who

lived in a defined geographic region and had particular dietary habits peculiar to it were represented in the sample; finally, the study groups differed significantly in number. All these factors limit the generalization of the obtained results. Patients do not always share the information about their dietary habits as they do not associate them with dental pathology.<sup>7</sup>

## **Conclusions**

The analysis of dietary habits of dental patients is important for their timely correction. We recommend taking into account the identified correlations when planning individual treatment and preventive measures, especially in young patients, in order to prevent the progression of cervical dental pathology and the development of its combined forms in the future. The considered eating and drinking habits have the opposite effect on the prevalence and intensity of cervical dental lesions, so they require further research.

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