Correlations of Oral Hygiene and Health Behavior of Teenagers Living in the Cumulatively Disadvantaged Northern Region of Hungary

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Abstract

Objective: In the present research, we aim to highlight the urgent need for prevention and health education by exploring the oral health indicators of the most deprived groups in Northern Hungary, especially in the light of the severely negative effects (pandemic) and circumstances of the past years. **Material and Method:** The study included 111 students living in Borsod-Abaúj Zemplén county with a high level of disadvantage, but studying in a secondary school in a large city, average age 16.2±1.5 years, gender ratio 37.3/62.7(%).We performed a dental screening, completed a questionnaire on lifestyle and health behaviour, and used Rosenberg Self-Assessment Scale, Shame Experience Scale. **Results:** Dental status of the students is poor, with many decay and few filled teeth. They consumed energy drink, alcoholic drink (strong alcohol) in high percent, and this occurs great frequency in the family. Students exercise little outside of class, do not play sports regularly, and hardly ever see their parents playing sports. Students do little physical activity outside of school, do not play sport regularly and their parents are hardly ever seen playing sport. Their feelings of shame are minimal and their self-esteem low, many have special educational needs. **Conclusion:** Together, the results can increase the separation of these social groups to an extent that is already difficult to manage even at the level of society as a whole. All of this calls for cooperation between psychopedagogues, special education teachers and health professionals.

Keywords: health education, oral hygiene, health behavior, disadvantaged situation, special education teacher

Introduction

Hungarian indicators of oral health are weak. In the ranking of the countries of the European Union, we are among the lasts, both in terms of children completely caries free and DMFT[1] values, based on the CECDO[2] data base (Hajdú, Kertesi,2015). This situation was further worsened by the pandemic of the last three years as is confirmed by several international studies (Hertento,2022, Sari,2022). According to the conclusions of the study, the pandemic had a predictably bad effect on the oral health, especially in case of disadvantaged parents with low income. In Hungary this is enhanced by the fact, that preventive services are underutilized in both adult and pediatric dentistry (Pinke et al,2011). That didn't improve in the last decade either, based on HBSC[3] 2020 data.

It is a well-known fact that social-economic background and level of education have a great influence on the state of teeth (Faragó et al,2020)(Northridge et al,2020). In our research project we tried to assess the oral health status of people living in extreme poverty/poverty, in the light of brushing teeth and eating habits and the availability of primary prevention services. We also examined the form and extent of the various health behavior risk factors in this population.

In Hungary the risk of poverty is determined on the minimum subsistence level calculations by the Central Statistics Office (KSH). We can evaluate poverty, unemployment, old age, disability, housing problems and social exclusion as a social risk, which in the long run, imposes a heavy burden on all layers of society. A uniform metric is used to measure poverty in the European Union, the so-called AROPE (At Risk of Poverty or Social Exclusion) ratio. This represents the proportion of people exposed to social exclusion based on three indicators. Among these, the most common indicator is the so called 'Relative income poverty'**.** This measure represents the proportion of people living in households where 'net income does not reach 60% of the median income' (Dávid et al, 2021,p.373.). The other two measures in the dimension of deprivation and work intensity, give the ratio where they are forced to give up material possessions, and how many of them are out of the labour market (KSH,2020). According to this, 17.7% of the total population of Hungary lives in poverty and social exclusion. In Northern Hungary it characterizes every fourth family. People living here are twice as deprived as the national average (Dávid et al,2021).

In addition to all this, deep poverty is characterized by low education, segregation, unemployment and the existance of large families, as well as the chance that the disadvantaged situation will reappear.[1]

Cserti Csapó Tibor and Orsós Anna wrote in the 2013 book 'Equal opportunities in today's Hungary', that the 'young face of poverty' is dominant among people living in deep poverty. According to their data, 30% of the poor belong to the 0-17 age group. (Cserti,

[1] DMFT: the sum of the number of Decayed, Missing and Filled Teeth in relation to the population
[2] CECDO: the Council of European Chief Dental Officers, database 2015
[3] HBSC: Health Behaviour in School-aged Children

Orsós,2013,p.99). All of this is supported by the research we previously conducted in the small region of Abaúj (Kőrösi, Kiss-Tóth, 2020).

These marginalised groups are particularly difficult to reach with prevention programmes, dental education, and the usual methods. Unfortunately, the average population also has difficulties in this area, despite the fact that, in addition to curing diseases, a dentist must also think about their prevention. Every doctor is also an educator, who must fulfill an important educational role during his preventive work. It is not only an opportunity, but also a legal obligation. The current health law prescribes for dentists to actively participate in health education (Health Law, 1997, CLIV,79. (bb)).

An important tool of health education is the permanent personal communication. It is not an easy task, since the majority of dentists don't have pedagogical knowledge that would help them in this. These skills may only develop over years, but according to experience they can be improved. Health education with pedagogical methods could be applied more effectively and more widely if specially trained teachers would do it together with dentists. This is especially true for cumulatively disadvantaged groups living in extreme poverty.

However, we must not forget the responsibility of the patient: not only the care system or health educators have a serious task in this issue. If the patient often cancels the visits, skips brushing and dental care procedures, step by step, he will get closer to irrevocable damage to his teeth and alveolus. In other words, the active cooperation of the patient and the healthcare workers is essential for the preservation of health.

Traditional ways of communication and traditional educational tools can be hardly used with the studied population. All this is even more important in the light of the data, according to which, in many cases, they either have special educational needs, or they also struggle with a behavioral disorder (Shenkin,2005).

The important goal of our present resarch, in addition to getting to know the the oral hygiene data, is to assess with the help of Rosenberg Self-esteem Scale and the Shame Experience Scale, what is the self –evaluation and how strong is the sense of shame in the studied population. In this way, an insight is indirectly gained into the way how the professionals could inculcate the prevention approach in these groups.

As revealed in an American study (Bersell,2017), the inaccessibility of dental care in disadvantaged groups calls for urgent steps. It is primarily in the field of prevention, that can only be implemented with the involvement of prevention specialists, stronger funding and greater support from allied professions.

Methods and data:

Students living in the cumulatively disadvantaged settlements of Borsod-Abaúj-Zemplén county, but studying in a high school of a big city, participated in the data collection of our research. Beyond oral hygiene data, it extends to young people's lifestyle, psychosomatic condition, self-esteem and possible sense of shame. During the research, we completed a dental screening and a questionnare for lifestyle and health behavior, and also used the Rosenberg Self-assesment Scale (Horváth et al,2022) and the Shame Experience Scale (Vizin, 2022).

With the help of these two scales we can get to know, how young people relate to themselves and to their possibly harmful health behavior. In case of RSES scale, the higher value shows greater self-esteem, while in the Shame Experience Scale higher values indicate the presence of a higher chronic shame.

During data collection we also used the Fagerström Test for Nicotine Dependence (FTND). The Fagerström Test for Nicotine Dependence can be used to evaluate the the nicotine addiction related to smoking. FTND is scored from 0 to 10. Higher the score, graeater the chance for a physical nicotine addiction. The shorter version of FTND is the Smoking Severity Index. With this tool heavy and light smokers can be identified more precisely (Pénzes, 2022).

The screening test was done by Dr. Ildiko Faragó, in a dental chair, under well-illuminated circumstances, with single used tools.

There were no radiological examinations perfomed.

To survey caries prevalance, DMFT values accepted by the WHO (1997) were recorded. D: decay, M: missing, F: filled, T:teeth ,where DMFT value is the amount of decay, missing and filled teeth for the studied population.

The questionnaires in the research were used with the help of measuring commissioners.

Characteristics of the sample:

111 people participated in the study, they were on average 16.2 +/- 1.5 years old. 62.7% of them were girls and 37.3% were boys.

Results

Social- economic background:

The students' parents have a low-level of education. (Figure 1.)

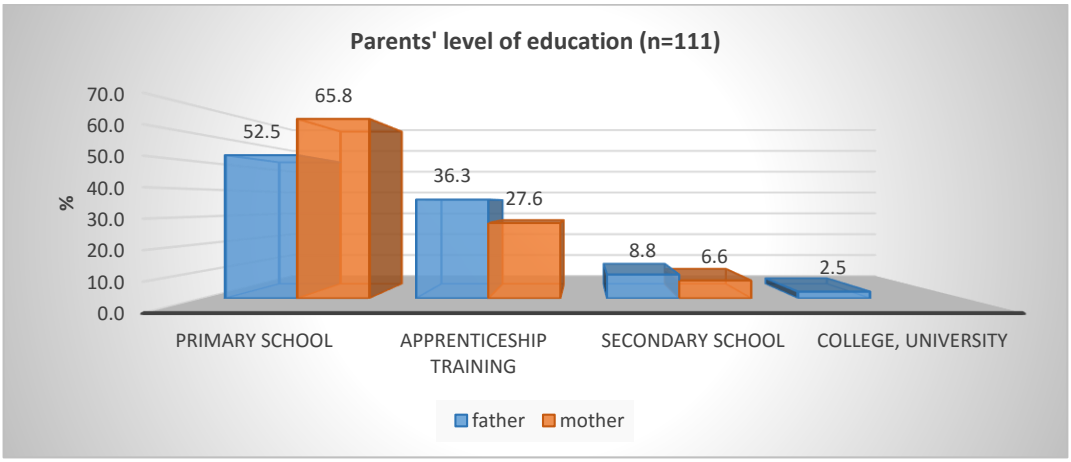

Figure 1. Parents' level of education in the study population

Based on the responses to the questionnaire, 52.5% of the fathers and 27.6% of the mothers have only primary education. 36.3% of the fathers and 27.6% of the mothers have vocational

qualifications. Significally fewer people have a high school diploma: 8.8% of the fathers, 6.6% of the mothers. Only fathers have higher education: 2.5%.

28% of the parents do not work. They are among those with lower education.

On average the students live in a slightly larger than two -room apartment (x=2.2). 12,8% of them live in a one-room apartment, 52.3% live in a two-room apartment, and 34.9% live with more than two rooms. On average 4.6 persons live in a household, 9.7% live in households with two people, but 50% live in households with more than 5 people. 5.6% of students live in households with more than 8 persons, but there are also students living in households with 10 people.

A student on average has 2.4 siblings. 17.3% of them have one sibling, 28% have two, but the most of them have three or more ones (48%). There are few only children among them (6.7%).

There is a weak correlation between the mother's education and the number of siblings.(r=-0.21) Mothers with low education have more children.

The majority of bigger families live in larger apartments (r=0.52). In the 11% of the families bringing up 3 or more children, there is no piped water. In 19% of the households there is no bathroom.

31.5% of the students don't have breakfast at home. Most of them regularly have cooked meal, but 38.1% of them eat cooked meal at home only at the weekends, and 6% of them do this very rarely. They don't really like soups (3.6%), they prefer pasta (21.6%), cooked vegetables (12.6%) and meat (13.5%).

58.1% of them comsume energy drinks on a daily (33.7%) or weekly basis (26.5%). Boys and girls consume energy drinks in almost the same proportion, but boys consume a slightly higher proportion.

54.6% of the students drink alcohol with different frequencies. 27% of them consume alcohol every day, 21.6% every week, 24.3% rarely and 25.7% only at family gatherings (Figure 2).

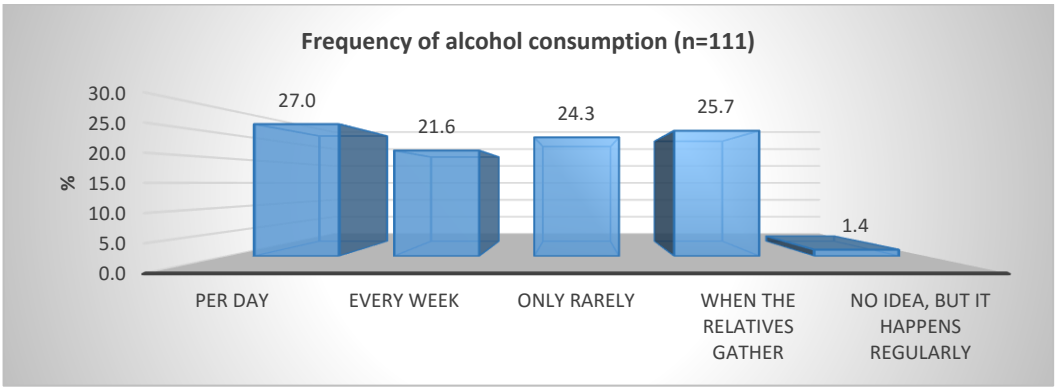

Figure 2. Frequency of alcohol consumption among examined students

There is no significant gender difference in terms of alcohol consumption, but the girls drink more (r=0.24)(Figure 3.).

Pálinka, beer and whiskey are most often consumed, but several people also mentioned vodka.

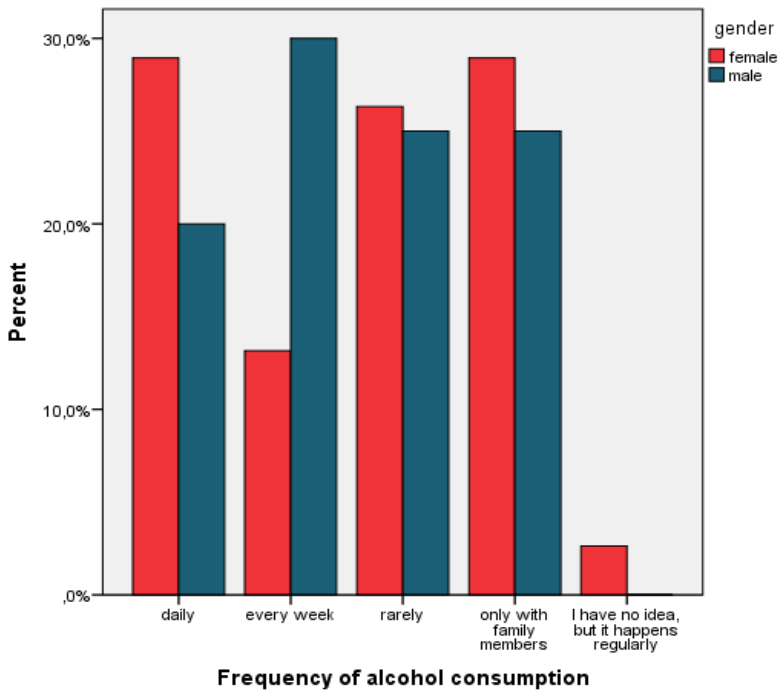

Figure 3. Frequency of alcohol consumption in relation to gender in the study pouplation

In 23% of the answers students wrote, that their family members also consume alcohol on a regular basis.

Most of the students don't do any sports in their freetime (Figure 4.).

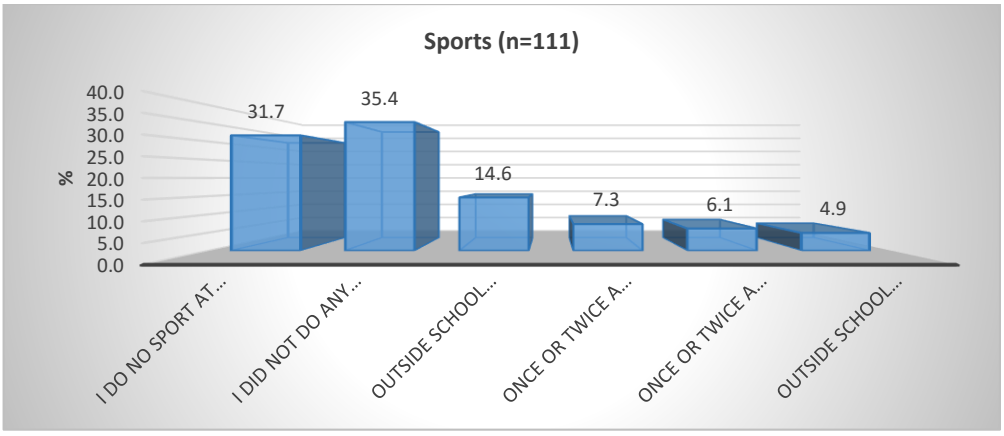

Figure 4. Free time activities, sports among examined students

Most of the students don't do any sports in their free time. 31,7 % of them don't do sports, because they are exempt from physical education. The others only occasionally do exercises

as an out-of-school activity. Boys are more active than girls. There is a weak correlation between the students' and their parents' sporting habits (r=0.25.) The students mostly play football (4.9%), ride a bike (2.7%) or go dancing (1.9%).

44.3% of the students smoke. The Fagerström Test for Nicotine Dependence can be used to evaluate the the nicotine addiction level related to smoking. This tool is scored from 0 to 10. When evaluating the results, 0-2 points show very low level of addiction, 3-4 points show low level of addiction, 5 points show medium level of addiction, 6-7 points show high level of addiction and 8-10 point show very high level of addiction. In our sample the participating smokers average score is 6.3 ± 2.8, so the students showed high level of addiction. 11.1% of smokers showed very low level of addiction, 9.3% showed low level of addiction, 13% showed medium level of addiction, 27.8% showed high level of addiction while 38.9% showed very high level of addiction.

Self-evaluation:

A maximum of 40 points can be achieved on the Rosenberg self-evalution scale. The average score of the students participating in the data collection is 24.9 +/- 75.97. That means that the students' self –esteem is lower and the standard deviation is high. Lower self-esteem is not in connection with dental status (r=0.044), and their bad teeth are not something to be ashamed of (r=0.018). The girls' self-evaluation is lower than boys' (r=0.25p< 0.05).

A maximum of 100 points can be achieved on the Shame Experience Scale. The average of that in the sample is 52.7+/- 17.6. This rate is also low. Examining the subscales, the average score for characterological shame is 25.1, the average score for behavioral shame is20.7, and the average score for body shame is 8.7. All values of the shame scale minimally exceed the threshold criteria. In case of girls, body shame is significantly higher, than that of boys (r=0.27; p<0.046), but that is not related to poor oral hygiene. The shame scale shows a moderate correlation with alcohol consumption (r=0.3; p<0.014). In relation to alcohol consumption, bodyshame is the most prominent (r=0.31; p<0.012).

This is followed by characterological shame, and there is a weak correlation in the behavioral dimension (r=0.21).

Dental health status, DMFT values

So far, 69 students have participated in the dental screening, but the screening process has not yet been completed. The DMFT average of the remaining teeth is 7,2 ± 5,7 (mean ± standard deviation). The minimum index is 0, the maximum is 29. In the case of many students, it can be said, that the most of his teeth are decayed. (Figure 5.) The students have an average of 4.8 ± 4.3 decayed teeth. We found a student with 20 caries. On average 1.3 ± 1.7 teeth were missing (M value), and only 0.43 ± 0.9 teeth were filled (F value).

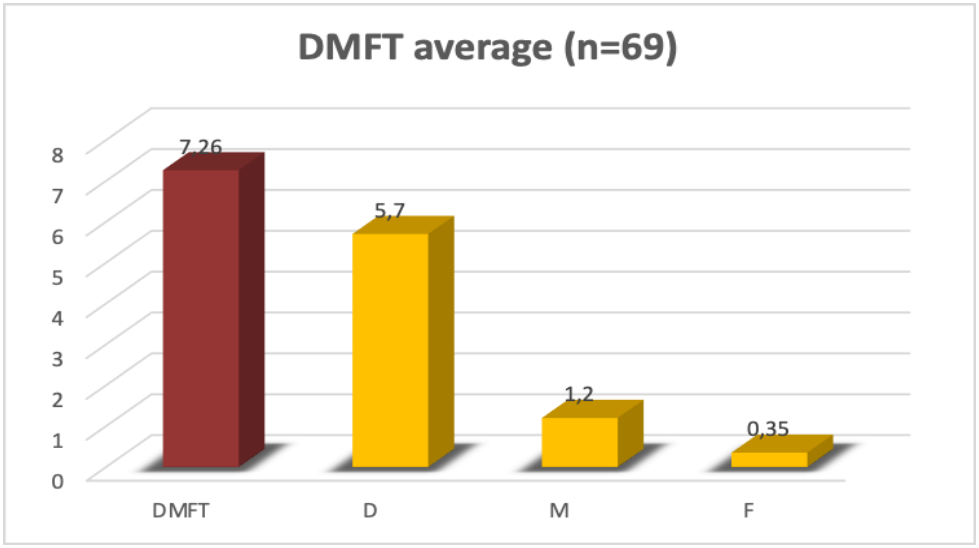

Figure 5. Dental status (Decayed 'D', Missing 'M', Filled 'F' average) in the examined population

There is no correlation between the DMFT index and gender (r = 0,007), but boys' teeth are somewhat in worse condition than girls' ones. (Table 1.) The percentage of caries-free young people is 0.03% in our study.

DMFT n=69

Gender	average	SD
girl	8,1290	6,56629
boy	8,2222	5,52593

Table 1. DMFT value in relation to gender in the study population

The majority of the students are aware of their own dental status (r=0,313, p<0,014), as young people with bad teeth admit the fact, that they have bad teeth.

There is a no correlation between the frequency of alcohol consumption and DMFT values(r=0.1). But, young people who drink alcohol more often, have worse teeth.

91.6% of students have seen their parents brushing their teeth, but 8.4% of them have never seen their parents performing this activity.

35% of the students were shown the correct brushing by their parents, 15.6% were educated by the nurse, and 7% by the dental staff.

According to their own oppinion, 42% of them were not educated in this issue.

Discussion

Based on what was described in the introduction, the studied population consists of young people coming from a cumulatively disadvantaged environment, yet they continue their education in secondary school. In our present research, we focused on their oral health status, oral hygiene habits, health behavior habits and the self-evaluation, self-esteem, and shame that may be associated with these. The analysis of the existing socio-cultural background was also an important aspect in terms of their health-related behavior.

In order to reduce inequalities it is very important to improve mental and physical health. Identifying the problems can help determine the areas that need improvement for different disadvantaged groups. Special attention should be paid to a healthy lifestyle, prevention-related awareness and coping with stress.

Based on the results, we can conclude that most of the students studying here live in large families (where there are 3 or more siblings), with low-educated parents (65.8%), and a large percentage (50.5%) have more than five people living in one household. Nearly 11% of households with at least three or more children do not have running water, and it is also typical for these large families to have no bathroom (19%). In these families 28% of the parents do not work.

Educational institutions in disadvantaged regions try to organize screenings and programs in order to preserve and improve the health of young people, but the parental role is decisive in the health behavior of students (Kopkáné et al, 2020).

The best example of this is alcohol consumption: 27% of students consume alcohol daily, and 23% at family gatherings. 25.7% of family members regularly consume alcohol, while nearly 23% do not do any sports. There is a weak correlation between the students' sports activities and their parents' sports activities (r=0.25), the students who do not exercise have parents who do not exercise either. The picture is made even worse by the fact that a large percentage of them do not do any sports because they are exempted from physical education at school.

A large percentage also consumes energy drinks on a daily basis, and in terms of smoking, in a population with an average age of 16 there is a high proportion of smokers who would not be able to give up smoking at all. The smoking rate is high among students, and their nicotine addiction is outstandingly high. According to HBSC research data, more than 12% of Hungarian high school students smoke, 57% of them daily (HBSC, 2020).

Their condition of teeth is also worse than the Hungarian average, but they typically do not feel ashamed about it (DMFT 7.2). Alcohol consumption however

is associated with shame. Smoking and alcohol are known to act as stress relievers in a population that does not have adequate strategies to cope with the difficulties of everyday life.

All these harmful health behavior habits are of particular importance in cumulatively disadvantaged groups, since we know that among them there is a higher percentage of diseases that are common in Hungary, such as cardiovascular diseases, pulmonary diseases (asthma, lung tumors), oral cavity tumors, dental problems. Cancers are among the second most common causes of death in developed countries, and their prevention is also of great importance in the oral cavity (Furka, 2022).

66.7% of the Roma population over the age of 19 already have some kind of chronic illness (Cserti,Orsós,2013).The importance of health education and health promotion can easily be seen if we add to all of this the fact that their habits of going to the dentist are characterized by the desire to quickly eliminate pain, but not by participating in any kind of preventive activities.

Conclusion

Based on our results, we can say that there is an urgent need for specially trained specialists, special pedagogues, and psychopedagouges who can significantly improve the oral hygiene attitude and mental health of these cumulatively disadvantaged young people with primary prevention tools and specific educational methods. Community health development programs that strengthen social support and, in the case of schools located in disadvantaged regions, the use of qualified professionals to reduce the problem play an important role in achieving the goals. We consider it particularly important to emphasize this in a population that, despite all efforts so far, is racing down the slope of social segregation.

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