

DENTAL CARIES – DISTURBED BALANCE OF THE RISK FACTORS

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SUMMARY

Dental caries is a process developing as a result of the disturbed balance between the factors comprising the oral environment. It is the aim of this research to determine the correlation between the risk and protective factors in the dental caries in children in our country. Based on the model of Fetherstone, the creator of the concept of balanced caries, a diagram was built by us showing the balance between the active factors in the oral environment of the examined children. The protective factors that were found to effect a decrease in the risk of development of dental caries were not strongly manifested and were only active in a very small, sometimes even insignificant, part of the children. The risk factors found to be active in the group proved to be much more powerful. The occurrence of risk factors was proven in a major part of the children. These factors represent a serious risk provoking the development of a caries process. The combined action of the two types of factors tips the balance towards a development of the caries process.

Carbohydrate nutrition, the intermediate intake of carbohydrates, sweetened beverages and bad oral hygiene are the strongest risk factors for the children.

Dental caries is a process developing as a result of the disturbed balance between the factors comprising the oral environment (1, 2, 3, 4). Part of these factors, such as the microorganisms and carbohydrates, are a risk to the balance. Other factors have a protective effect, such as the the quantity of the saliva, its buffer capacity and oral self-purification (4, 5, 6, 7, 8, 9).

On the basis of the dynamic equilibrium of these factors Featherstone created in 2000 the conception of “balanced caries” (7, 8, 10). According to this conception, it depends on the balance between the protective and pathological factors whether a caries lesion will protect, stay the same or undergo a reversal 11, 13, 14, 15).

It is the aim of this research to determine the correlation between the risk and protective factors in the dental caries in children in our country.

MATERIAL AND METHODOLOGY:

A questionnaire was distributed among the parents of a 1000 children that had undergone a medical checkup. 337 of them returned their filled out questionnaires. Since the

factors we were going to look into are active in all age groups, the results were united in a combined group. Each of the factors was based on the concrete values of the DMFT and OHI determined in the children examined.

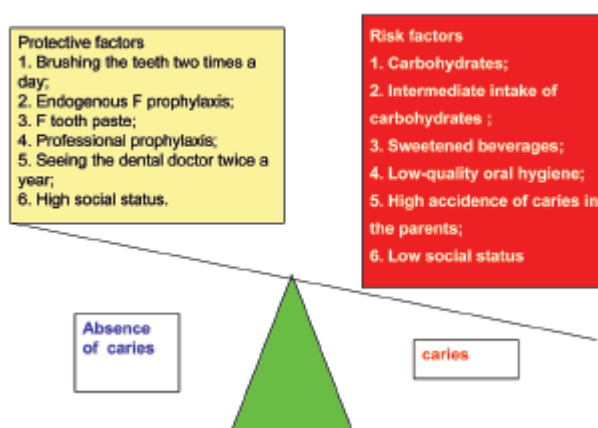
The factors studied were divided into two groups – risk and protective factors. In this way the questions the parents were asked were formulated.

RESULTS AND DISCUSSION

By means of the survey conducted the relative weight of the separate factors in the children studied was determined.

Based on the model of Fetherstone, the creator of the concept of balanced caries, a diagram was built by us showing the balance between the active factors in the oral environment of the examined children. This ad hoc diagram shows a picture of seriously disturbed balance between the effect from the protective and risk factors. The protective factors that were found to effect a decrease in the risk of development of dental caries were not strongly manifested and were only active in a very small, sometimes even insignificant, part of the children. The risk factors found to be active in the group proved to be much more powerful. The occurrence of risk factors was proven in a major part of the children. These factors represent a serious risk provoking the development of a caries process. The combined action of the two types of factors tips the balance towards a development of the caries process.

Diagram No 1. Balance of the active oral factors

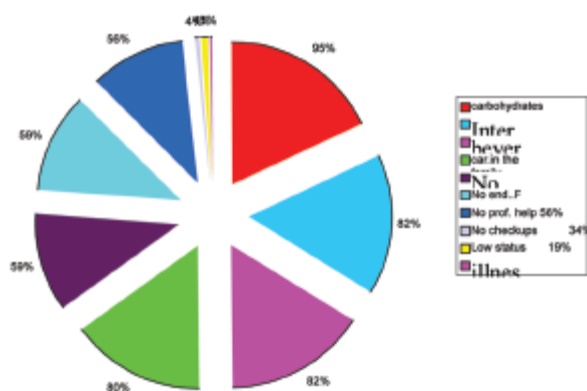


The combined effect from the factors tips the balance towards development of a caries process. The effect from the risk factors explains the picture observed in children seriously affected by the caries process. It was found out in the research that factors such as oral hygiene and social status which can have both a risk and protective impact usually evince as having a risk impact. Just a small part of the children in a usual Bulgarian school have a high social status. The average social status in the country is obviously still not high enough to make for a good and reliable protection against the risk of caries. Oral hygiene is still not at the level required. An insignificant part of the children brush their teeth twice a day. One of the most important risk factors is the intake of carbohydrates, especially the intermediate intake of carbohydrates, as well as the consumption of sweetened beverages. Obviously, the children have not been taught the dangers of overeating with carbohydrates and how to feed in general. Children restrain themselves neither in the quantity of carbohydrates consumed, nor in the way of their consumption. It is aspects of behaviour that can strongly diminish the negative effect from the intake of carbohydrates. School canteens and cafeteria offer food that is mainly carbohydrates and sweetened beverages. Children have no other choice but to take them for breakfast or snack.

The risk factors have been found out as occurring in so many of the children that the whole totality of children can be seen as subjected to the risk of developing dental caries.

So that we could make sure once again that the effect from the risk factors is very strong, we arranged them in accordance with their relative weight, the weight of the specific risk factors being determined by their occurrence in the group of children examined.

Diagram No 2. Weight of the risk factors in the group of children examined

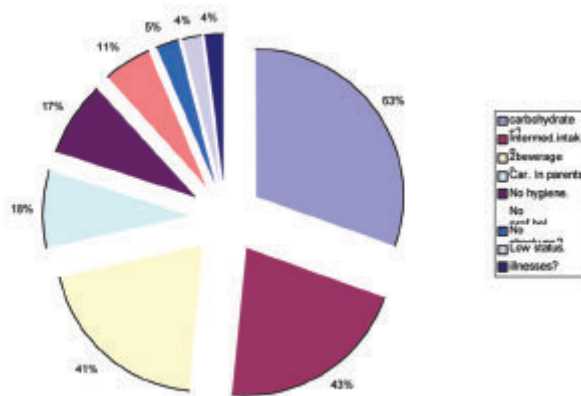


The diagram illustrates the fact that the intake of carbohydrates, the intermediate intake of carbohydrates and the intake of sweetened beverages are the most powerful factors. The first one is present 95% of the children and the other two - in 82% of the children. The massive occurrence of such factors makes the whole totality of children a risk group. The occurrence of caries observed in the whole group is clearly dependent on the presence of such strong primary factors.

The occurrence of caries in the parents – with which the occurrence of caries in the children is clearly correlated - is a strong factor too. 80% of the parents have teeth strongly afflicted with caries. This factor is very important. It is indicative of the way bad habits concerning the oral hygiene, the improper intake of carbohydrates as well as irrational nutrition are transmitted from parents to children. This is the way carbohydrate nutrition turns into a stable factor. The annihilation of this factor requires great efforts on the part of the parents mostly concerning information, motivation and behaviour.

59% of the children have no adequate oral hygiene. The same risk involves the lack of endogenous fluorine prophylaxis. Fluorine prophylaxis is a strong protective factor, which is absent in 59% of the children.

Diagram No 3. Occurrence of protective factors



Speaking the distribution of the protective factors, it must be pointed out that, unlike the risk factors, the most important protective factors are the ones least represented. This is so because the protective factors discovered did not suffice to balance the risk ones.

It can be seen that the use of fluorine tooth paste is the most common protective factor – 63% of the children use fluorine tooth paste. The protective effect of the fluorine tooth paste was proven. Still, the fact remains that such a big percentage of children using fluorine tooth paste do have caries. Clearly, we have risk factors active here that masquerade the protective effect from a local fluorine

prophylaxis. Of course, there are other factors at work too - the frequency of brushing one's teeth and the method of conducting oral hygiene. Such factors can diminish the effect from the fluorine tooth paste.

It turns out from the replies parents gave us that the children had been widely receiving professional profilactic care. This does not change the caries status of the children, though. One of the reasons for this is identical with the reason mentioned above. The other reason is the quality of the prophylaxis applied, which may be different from the declared one. The minimum number of silants discovered in the mouth of the children examined is indicative of the low quality of the professional prophylactic care they were subjected to. It is mere profilactic checkups that are usually seen as profilaxis. Checkups are essential. They must be followed by adequate preventive treatment, though. It is a treatment involving the modelling of the factors active in the mouth.

The declared twice a day tooth brushing in 41% of the children should be regarded with the same scepticism.

The actual level of oral hygiene among children is too low to correspond to such a high percentage. Hence the potential of this protective factor. If good oral hygiene is really maintained there can be a real positive change.

The whole analysis reveals the strength of carbohydrate nutrition and oral hygiene as factors influencing the development and progression of the caries process.

CONCLUSIONS:

1. Carbohydrate nutrition, the intermediate intake of carbohydrates, sweetened beverages and bad oral hygiene are the strongest risk factors for the children.

2. Proven protective factors are tooth brushing twice a day, permanent endogenous fluorine prophylaxis in childhood, fluorine tooth paste and regular professional prophylaxis;

3. Risk factors prevail in the children examined which explains the high level of occurrence of caries.

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