

RELATIONSHIP BETWEEN CHILDREN'S DENTAL HEALTH AND PARENTAL KNOWLEDGE ABOUT ORAL HYGIENE

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Взаимосвязь между здоровьем зубов у детей и родительскими знаниями по гигиене полости рта
West Kazakhstan Medical journal
2019;61(1):65–70.**Relationship between children's dental health and parental knowledge about oral hygiene**A. Omargali¹, R. Uraz¹, P. Campbell²¹West Kazakhstan Marat Ospanov Medical University, Aktobe, Kazakhstan;²Heidelberg Institute of Public Health (HIPH), Heidelberg, Germany**Purpose.** The purpose of the recent study conducted in Aktobe City Children's Dental Clinic, Kazakhstan is to investigate association between level of parental knowledge about oral hygiene and dental caries prevalence of their children.**Methods.** Mixed method was used. Overall, 164 parents were interviewed by questionnaires to ascertain their knowledge and practice of oral hygiene care, their children were examined for evidence of caries, and the results were compared.**Results.** 98% children attending the clinic had dental caries with a severity index score (DMFT index) of 5.5. From the parents' statements it was found that 28% of their children brush their teeth only once a day (in contrast to the international recommendations for twice a day) and these children have a higher prevalence rates of caries. In addition, 12% of children were stated to brush their teeth for 1 minute each time (in contrast to the international recommendations for 2-3 minutes) and these children also showed a trend towards a higher prevalence of caries. 3.7% parents do not believe that oral health is associated with diet and 38.4 % parents do not know about this.**Conclusion.** These results highlight the need to make further efforts to educate parents on international standards for oral hygiene.**Keywords:** children, parents, caries, knowledge, teeth, diet, hygiene.**Балалардың ауыз қуысының саулығы мен ата-анасының ауыз қуысының гигиенасы жайындағы біліктілігінің арасындағы байланысы**A. Өмарғали¹, Р. Ураз¹, П. Кэмпбелл²¹Батыс Қазақстан Марат Оспанов атындағы медицина университеті, Ақтөбе, Қазақстан²Гейдельберг қоғамдық денсаулық сақтау институты (HIPH), Гейдельберг, Германия**Мақсаттары.** Ақтөбе қаласындағы балаларға арналған Стоматологиялық клиникада жүргізілген соңғы зерттеудің мақсаты - ата-аналардың ауыз қуысының гигиенасы жайында білімдерінің деңгейі мен олардың балаларының стоматологиялық кариесінің таралуы туралы анықтау.**Әдістері.** Аралас әдіс қолданылды. Жалпы алғанда, 164 ата-ана ауыз қуысының гигиенасы туралы білімі мен тәжірибесін анықтау үшін сауалнама жүргізді, ал олардың балалары кариес туралы куәліктерге тексерілді және нәтижелер салыстырылды.**Нәтижелері.** Тұтастай алғанда, клиникаға баратын балалардың 98% -ында 5,5-тен ауырлық индексі бар диагноз қойылды (DMFT индексі). Ата-аналардың мәлімдемесінде балалардың 28% -ы тәулігіне бір рет күніне бір рет (тек күніне екі рет халықаралық ұсыныстардан айырмашылығы бар) тістерін тазартадыOmargali A.
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және бұл балалар кариесінің таралу қарқыны жоғары болған. Сонымен қатар, балалардың 12% -ы әрбір минутына 1 минутқа тіс щеткаларын (2-3 минутқа дейін халықаралық ұсынымдардан айырмашылығы бар) тазалап, бұл балалар кариесінің таралуының жоғары үрдісін көрсетті. Ақырында, ауызша денсаулығының диеталармен байланысты екенін сұрады, ата-аналардың 3,7% -ы сенбеді және 38,4% -ы білмейтінін айтты.

Қорытынды. Бұл нәтижелер ауыз қуысының гигиенасына арналған халықаралық стандарттар негіздеріне ата-аналарды тәрбиелеу бойынша одан әрі күш-жігер жұмсау қажеттігін көрсетеді.

Негізгі сөздер: балалар, ата-аналар, тісжегі, білім, тістер, диета, гигиена.

Взаимосвязь между здоровьем зубов у детей и родительскими знаниями по гигиене полости рта

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Целью данного исследования, проведенного в Актюбинской городской детской стоматологической поликлинике, было изучение взаимосвязи между уровнем знаний родителей о гигиене полости рта и распространенностью кариеса зубов у их детей.

Методы. В данном исследовании был использован смешанный метод. В целом, 164 родителей были опрошены с помощью анкет для выяснения их знаний и практики гигиены полости рта, а их дети обследованы на наличие признаков кариеса, позже полученные результаты были сопоставлены.

Результаты. У 98% детей, которые посещают стоматолога, был кариес с индексом тяжести (индекс DMFT) 5,5. Из заявлений родителей было установлено, что 28% детей чистят зубы только один раз в день (в отличие от международных рекомендаций до двух раз в день), и эти дети имеют более высокий уровень распространенности кариеса. Кроме того, было заявлено, что 12% детей чистят зубы каждый раз в течение 1 минуты (в отличие от международных рекомендаций в течение 2-3 минут), и у них также наблюдается тенденция к более высокой распространенности кариеса. На вопрос связано ли здоровье полости рта с диетой, 3,7% родителей ответили – не связано, а 38,4% – не смогли дать ответ на данный вопрос.

Заключение. Эти результаты подчеркивают необходимость прилагать дальнейшие усилия по обучению родителей основам международных стандартов гигиены полости рта.

Ключевые слова: дети, родители, кариес, зубы, диета, гигиена.

Introduction

The most common oral diseases among children are gingivitis and dental caries. The latter affects 60-90% of children globally [1]. The prevention of childhood dental caries mainly relies on adherence to key behavioural messages, including twice daily tooth brushing for 2-3 minutes, using a soft toothbrush of age-appropriate size from an early age with fluoride toothpaste [2] and reducing the frequency of consuming sugary foods and drinks [3].

Nevertheless, awareness about these simple principles are not enough and require more complex efforts which are largely determined by a broad scope of psychosocial, economic and environmental factors [4]. A child's family plays an influential role in forming the perception to oral hygiene. Oral health knowledge, behaviour and beliefs that children gain in the family will follow them their entire lives. Early on, delivering correct information

on oral hygiene prevents oral diseases [5]. Therefore, parental knowledge and skills about oral hygiene can be a reliable indicator of child dental caries development and increasing their awareness should lead to an improvement in the oral health status of their children.

The high prevalence of caries among the population is due to neglect and leads to severe complications including, eventually, loss of the teeth. This can have a great impact on the health and lifestyle of the young population. For instance, 'In 1988, the severity level of caries' prevalence was low: over a decade ago the decayed missing and filled teeth (DMFT) index was 2.0 in Kazakhstan [1]. However, recent data reveals that it has now risen 80% with a DMFT of 2.6 [14]. Confirming this problem, according to a recent study conducted in Almaty, "out of 100 children examined at the age of 12, 76 of them had dental caries with overall DMFT 3.4 score" [6]. These facts clearly indicate

that, caries prevalence among the young population of Kazakhstan dramatically increasing over the last few decades.

However, little is known in Kazakhstan about parents' attitudes towards the importance of oral hygiene practices regarding their children nor on the impact of children's oral hygiene on their quality of life.

The aim of the recent study conducted in Aktobe City Children's Dental Clinic was to investigate relationships between level of parental knowledge about oral hygiene and prevalence of dental caries of their children.

Methods

Ethical approval

Approval for this study was obtained from the Ethics Committee of the University of Heidelberg, Germany (registration number S-138/2017). To conduct the study in Kazakhstan, approval was obtained from the head of the dental service in Aktobe, and from the head of the Aktobe Children Dental Clinic who are responsible for ethical questions on this topic according to the local regulations. Prior to data collection, all participating parents provided written informed consent to participate in the study and to use the data for publication. Additionally, participating parents were informed that they were free to withdraw from the study at any time and that all data would be handled with full regard to confidentiality and anonymity.

Research design and sampling procedure

A mixed method approach was used, incorporating both qualitative and quantitative methods. The study was carried out between April and August 2017 in Aktobe City Children's Dental Clinic.

The study had three objectives, which were to:

1. evaluate the prevalence of dental caries among children attending the clinic for routine check-ups
2. determine the level of parental awareness about their child's oral hygiene
3. define any correlations between the two.

First, a literature review was carried out of similar studies from peer-reviewed western journals, as well as research from Kazakhstan, in order to identify a logical framework for the area of study. Then a questionnaire was developed based on previously conducted studies in order to gain relevant information to determine parental awareness about their child's oral hygiene and its associated factors.

The study population were selected according to WHO recommended indicator age groups for dental survey among the visitors of the clinic. In order to reduce bias, inclusion/exclusion criteria were set:

- Inclusion of children in age groups recommended by WHO, and who attend only for a routine physical examination of oral cavity, with one of the parents to give informed consent and to answer the questionnaire.
- Exclusion of the child if parent is not available to give consent, if the parent refuses to give consent, or if the

child is able to understand and refuses to give consent. Either the child or parent may also refuse later even after giving initial consent.

164 children and their parents were included in the study.

Data collection

The data about parental level of knowledge and awareness of their children oral health status were collected via questionnaire, which contain quantitative and qualitative questions. Prior to the survey, all participating parents obtained information sheet and consent form. Purpose of the study were explained orally for each person and were asked to sign consent form if they agreed to participate. In parallel, dentists collected data about the condition of children oral health status in the Aktobe City Children's Dental Clinic. Dental caries was assessed in accordance with the DMFT index (D- decayed; M- missed; F- filled; T- teeth) recommended by WHO for dental examination.

Data analysis

Results of both data sets were transformed into numerical data in order to simplify and accelerate data entrance in spreadsheet. Then the relationship between the values, including the time of day for toothbrushing, frequency of toothbrushing, dietary habits of the children and frequency of sweets consumption were compared with caries prevalence of each children age group through figures and graphs in *Microsoft Excel*.

Results

Oral Examination Findings

164 children who came for routine dental check-ups (and their parents) were eventually included in the study. The oral examination used the DMFT+dmft index, which is the standard method to record the severity of dental caries, where DMFT is used for the older children describing the number of Decayed, Missing due to caries, and Filled Teeth in the permanent dentition, while dmft is used for younger children to describe their primary dentition [7].

Table 1 gives the overall examination findings with 15 (9%) children having a DMFT index above 6.5, the level above which the WHO considers severe [7].

In total, 97.5% of the children had dental caries (Table 2), with a mean DMFT index of 5.5, and a standard deviation of 3.3. The highest mean number of dental caries was 7.27, among 5-year-old children. The second highest mean of 5.85 was among children up to 7 years of age.

Questionnaire findings

42.1% of parents either did not believe that diet affects oral health (3.7%) or stated that they did not know (38.4 %), and acknowledged that 77.5% of their children eat sweets on a daily basis.

Interestingly, 25 (15%) of the parents said that their children eats sweets more than 7 times every day, and maximum number of consumed sweets according to the parents response was 20 times per day.

In addition, 27% of parents said they have never had a conversation with their children about the dangers of sugar consumption.

The figure above illustrates the correlation between most frequent daily intake of the sweets with the children caries prevalence. According to this figure, the children who consume sweets 7 times per day had higher caries prevalence compared with children who consume less.

The following data shows the relationship between length of tooth brushing and the DMFT scores.

Here, it can be seen that 12% of children were stated to brush their teeth for 1 minute each time (in contrast to the international recommendations for 2-3 minutes) and these children also showed a trend towards a higher prevalence of caries.

Table 1: Overall Oral Health Examination Results

Age of child (years)	DMFT+dmf																														Total Number		
	0		1		2		3		4		5		6		7		8		9		10		11		12		13		14			15	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%			
5	0	0	0	0	4	2	3	2	4	2	2	1	4	2	4	2	11	7	2	1	2	1	1	1	5	3	1	1	0	0	1	1	44
7	2	1	2	1	2	1	3	2	6	4	4	2	6	4	3	2	3	2	3	2	2	1	1	1	3	2	0	0	0	0	0	0	40
12	3	2	2	1	13	8	3	2	4	2	8	5	2	1	1	1	1	1	0	0	2	1	0	0	0	0	1	1	0	0	0	0	40
15	1	1	3	2	2	1	8	5	7	4	3	2	8	5	1	1	3	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	40
Total	6	4	7	4	21	13	17	10	21	13	17	10	20	12	9	5	18	11	6	4	7	4	3	2	9	5	2	1	0	0	1	1	164
Average	2	1	2	1	5	3	4	3	5	3	4	3	5	3	2	1	5	3	2	1	2	1	1	0	2	1	1	0	0	0	0	0	

Table 2: The prevalence and averages (mean) of caries among the 4 age groups

Age group	Number	Prevalence %	Mean number of caries	Standard deviation	Min.	Max.
5 Years	44	100	7.3	3.3	2	15
7 Years	40	95	5.9	3.3	0	12
12 Years	40	92.5	3.8	2.8	0	13
15 Years	40	97.5	4.9	2.8	0	12
TOTAL	164	97.5	5.5	3.3	0	15

Table 3: Response of the parents about importance of diet and frequency of sweets consumption by their children

	N(Parents)	%
Does the condition of oral health depend on diet (food habits)?		
• Yes	95	57.9
• No	6	3.7
• I do not know	63	38.4
Total	164	100
How often does your child eat sweets?		
• if daily, how often		
• 1-3 times	90	54.9
• more than 3 times	37	22.6
Sub-Total	127	77.5
if weekly, how often?		
• 1-3 times	24	14.6
• more than 3 times	13	7.9
Sub-Total	39	22.5

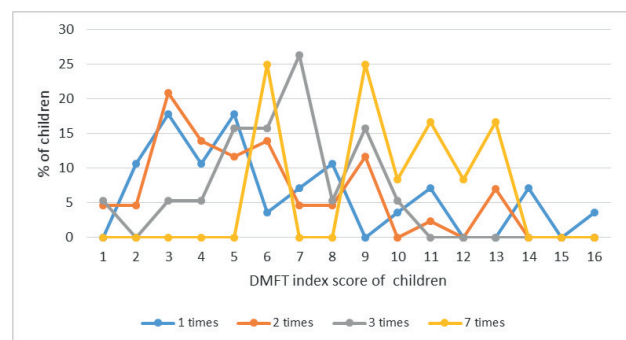


Figure 1: Correlation between daily sweet consumption and caries prevalence

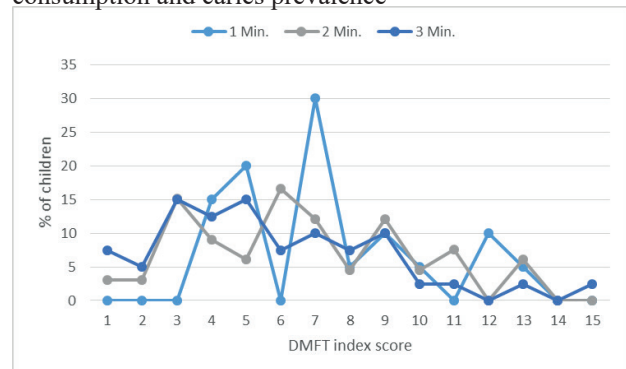


Figure 2: Comparison between the DMFT score and the number of minutes to brush teeth (% of all children)

Table 4: duration of tooth brushing in different age groups

Time	5 years	7 years	12 years	15 years	Total	%
1 minutes	3	9	3	5	20	12.2
2 minutes	19	14	18	15	66	40.2
3 minutes	11	10	9	10	40	24.4
4 minutes and over	11	7	10	10	38	23.1
Total	44	40	40	40	164	100

Discussion

The prevalence (98%) and severity of caries (overall mean DMFT score of 5.5, with 9% having a DMFT index above 6.5) of the children in the study in Aktobe, Kazakhstan is high in comparison with other countries. For instance, according to WHO Oral Health Countries Profile Programme, the DMFT index in the United Kingdom for 12 years old children in 2013 was 0.8. Similarly, in Germany in 2014, the DMFT index score for 12 years old children was 0.5 (Malmo University 2017, EURO Oral Health Database)

Another study conducted in Greece in 2012 showed that the mean DMFT value for 5, 12 and 15 age group was 1.77, 2.05 and 3.19 respectively [8]. In Asian countries such as Japan and Korea DMFT index in 2012, for 12 years old children was 1.2 and 1.8, respectively (Malmo University 2017, WPRO Oral Health Database)

This could be related to several factors, such as the availability of dental treatment, poor oral hygiene skills, as well as to parents' attitudes towards oral hygiene of their children [9]. In the present study an attempt was made to investigate some factors related with parents level of knowledge and attitudes toward oral hygiene.

Parental knowledge about importance of healthy diet for their children investigated in the present study was moderate with 29% saying that they had not had a conversation with their children on this topic. This lack of interaction may be explained by the fact that 42.1% of the parents either did not believe that diet affects oral health (3.7%) or stated that they did not know (38.4 %).

The high sugar intake found among the children in the study (77.5% eat sweets daily, and 22.6% consume sweets more than 3 times per day), is echoed by the findings of another study by Olczak [10]. Numerous independent expert and consensus reports have concluded that sugars are the most important dietary factor in the development of dental caries [11-13]. According to the current WHO guidelines, sugar intake should be restricted to the amount providing less than 10% of the daily energy requirement, i.e., below 20 kg of sugar per year [13]. From this study it is highly likely that their children of Aktobe come close to, or exceed, the recommended maximum intake of sugar.

In addition to concerns about the level of parental knowledge about dietary habits, the study also highlights the lack of knowledge among parents concerning tooth-brushing techniques (length of time to brush teeth, and frequency) and reveals some correlation between these factors and the level of severity of caries in their children's teeth.

Conclusions

The present study conducted in the Aktobe City Children's Dental Clinic found that caries prevalence among the study population was very high and that there is some correlation between this and the awareness of the parents about importance of healthy diet and tooth-brushing techniques were moderate to low.

There is therefore a pressing need to review current practices in relation to efforts to build awareness and knowledge among parents (in addition to those taking place for the children themselves in school programmes etc) in order to change behaviours and reduce the prevalence and severity of caries among children of school age in Aktobe, and perhaps in other areas of Kazakhstan also. There have only been a few similar studies carried out in Kazakhstan, and almost none published in peer reviewed journals, so more needs to be done to clarify the situation and to begin to take the necessary steps.

It is to be hoped that this study will provide a good basis on which to build further research in Kazakhstan, in order to identify these and other factors which are influencing the prevalence and severity of dental caries among the youth of Kazakhstan.

Conflicts of interests

None.

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