TOPICAL ISSUE

A.D. Semenov, I.D. Ushnitsky, A.S. Rogaleva, A.M. Degtyareva, R.I.Egorov

Analysis and Evaluation of the Need for Dental Care of Residents of Yakutia Industrial Regions

ABSTRACT

The results of investigation describe high prevalence of common dental diseases among the residents of industrial areas of the Republic of Sakha (Yakutia).In the age group of 3 years old children the temporary teeth caries susceptibility characterizes that every 4th child has the pathological processes of hard dental tissues with demineralization formation. But at the same time, every child of the preschool years has a dental caries. Dental caries in permanent teeth was detected in every surveyed school-age child; the level of caries intensity is characterized as a high. The frequency of pathological processes of periodontal tissue in 15-year-old kids is interpreted as a high level. Significant increase in indicators of pathological periodontal pocket pockets is shown in the structure of CPI components, that shows inflammatory and destructive process of periodontal tissues and the clinical picture of periodontal disease is defined as expressed. Meanwhile, the intensity of caries lesions is defined as high among people aged 35-44 years, but in the mouth of people aged 65-74 years there are only up to 5 teeth due to the complications of dental caries and periodontal disease.

Keywords: dental caries, dental defects, removable and non-removable dentures, periodontal disease, industrial areas, dental care needs.

INTRODUCTION

Nowadays the development of national economy mostly depends on industrial enterprises [1, 2, 3, 8]. Thus, special attention is given to the development and exploration of the Northern territories. The special importance on this background has the health care system improvement which is based on knowledge of clinical-epidemiological peculiarities and level of population need of medical care [4, 7, 11, 12].

The Republic of Sakha (Yakutia) has specific regional living conditions which are connected with the huge territory, difficult transport scheme, lack of ultra-violet, long cold winter period, low level of mineralization of the main sources of drinking water. Besides, close arrangement of permafrost layer often promotes the development of catarrhal diseases during the

summer period [5, 6, 8, 9, 10]. The mining industry of gold, tin, coal, silver, etc. is developed in the region. The examination of the population of Central, Vilyuysky, Northern and Southern regions of the republic characterize various levels of prevalence of pathological processes of organs and tissues of the oral cavity among various age groups of the population. Thus there are no data of diseases of the population of industrial regions of Yakutia. Taking it into account, we've made the complex clinical-epidemiological research.

Research aim. To determine the level of need of the dental help of inhabitants of industrial regions of Yakutia on the basis of results of clinical-epidemiological research.

MATERIAL AND METHODS

Clinical-epidemiological research of 1840 people aged from 3 till 93 years old living in Tomponsky, Oymyakonsky, Nyurbinsky and Anabarsky regions of the Republic of Sakha (Yakutia) has been done. Thus, according to the WHO classification the following key age groups were created: 3, 6, 12, 15, 35-44 and 65-74 years old. The assessment of the dental status was carried out with the use of standard indexes and WHO criteria. A special card recommended by WHO (1997) was used for examination. Studying of teeth caries was carried out by indicators of prevalence and intensity of caries. Intensity of damage was determined by the CFE indexes and CF where all filled, extracted and affected with caries teeth were considered. The arithmetic-mean value of CFE and CF were defined while examining groups. Level of dental help was determined by the technique offered by P.A. Leus (1987). The condition of parodontium tissues was defined on the basis of indicators of the public dental plaque CPI (1995) index. Indicators of prevalence and intensity of parodontium diseases were estimated by the criteria developed by WHO experts.

The orthopedic status included existence or lack of dentures. The available removable and fixed dentures have been analyzed, estimated by types, number and condition of abutment teeth, functional and esthetic conditions of dentures, production materials of dentures, terms of use, cause of their replacement, and need of orthopedic treatment.

Statistical processing of clinical material was carried out with application of standard methods of variation statistics with calculation of average size, mean square mistake by means of packages of the applied programs "Microsoft Excel" 2007 (Microsoft Corporation). The received results were grouped in a set of identical signs. The critical significance value when checking statistical hypotheses was $p \leq 0.05$.

RESULTS AND DISCUSSION

The received research data have revealed some features of a clinical course of the main dental diseases among examined age groups of the population. Thus, the indicator of frequency of pathological processes of hard tissues of temporary teeth of demineralizing character was at the

level of 37.21+0,63% among children of 3 years old where each child was defined up to 2,31+0,06 carious and filled teeth on average, and 6 year-old children have – 97,53+0,60% and 3,43+0,22 respectively.

It should be noted that in age groups of school children and adults the high level of prevalence of teeth caries which fluctuates ranging from 97,53+0,60 to 100% has been noted. In this regard the average level of prevalence of caries of teeth among children of school age and adult population was 99,51+0,62%, the average level of intensity 13,44+0,19. It should be noted that in these key age groups like 12 years old the intensity of teeth caries damage was up to standard 5.45+0,23, and in age group of 35-44 years – 19,72+0,21 which were interpreted as high and very high levels.

It is necessary to emphasize that the variability of the received results was defined in structure of the components of the CFE indexes and CF. Thus, 3-year-old children had data of carious teeth where the indicator was 74.45+0.74%, at that time the indicator of the filled teeth averaged to 25.55+0,75%. The component "K" (49.62+0.87%) prevailed among children of school age, and values of components "P" and "U" respectively were at the level of 40.95+0,94% and 9,43+0,98%. Adult population of 35-44 years had a high level of indicator "K" (45,63+0,86%), and data of components of the filled and extracted teeth were 33,94+0,64% and 20.43+0,75%. Meanwhile in the age group of 65-74 years old substantial increase of the extracted teeth (79.78+1.03%) where carious and filled teeth was only 15,61+1,05% and 4.61+0,93%. Such situation among patients of this age group is connected with the loss of teeth concerning complications of teeth caries and diseases of parodontium.

Frequency of pathological processes of parodontium tissues of inflammatory- destructive and exchange - dystrophic character testifies to its high level (tab. 1). So, the average level of prevalence of pathological processes of parodontium tissues among examined age groups of the population was 82,87+0,30%. In age group of 65 and older there is a decrease of cases due to the natural processes connected with the loss of teeth. Meanwhile, 15-year-old teenagers have a frequency data "Bleeding of gums" (40,17+0,85) and "Supra- and subgingival calculus" (50,73+0,68) which are characterized as the average level. The increase of frequency of dental sextants and pathological periodontal pocket is defined with the age in data of intensity of parodontium tissues damage that testifies to severity of parodontium diseases of inflammatory and destructive character. Thus 15-year-old teenagers have data of intensity of parodontium tissues damage the components "Bleeding of Gums" (2.30+0,04) and "Supra- and subgingival calculus" (2,85+0,03) which are interpreted as high levels.

Table 1

Prevalence and intensity of parodontium diseases among population

Age groups	Prevalence, %	CPI, %			
		Healthy	Bleeding	Supra- and subgingival calculus	Pathological periodontal pocket
15 (n=312)	88,89±0,11	6,64±0,97	40,17±0,85	50,73±0,68	2,46±0,95
35-44 (n=332)	98,31±0,38	1,73±0,94	18,14±0,82	44,33±0,66	35,80±0,92
65 and older (n=257)	61,43±0,42	0,12±1,10	12,68±0,96	29,95±0,77	57,25±1,07
Total	82,87±0,30	2,83±1,00	23,66±0,87	41,67±0,70	31,84±0,98

It should be noted that indicators of need in one type of denture and combined denture was

Age groups	CPI (sextant)				
	Healthy	Bleeding	Supra- and subgingival calculus	Pathological periodontal pocket	Unaccounted dental sextants
15 (n=312)	0,37±0,06	2,30±0,04	2,85±0,03	0,47±0,04	0,01±0,01
35-44 (n=332)	0,07±0,05	1,08±0,05	2,34±0,07	2,24±0,03	0,27±0,06
65 and older (n=257)	0,01±0,07	0,15±0,06	0,61±0,06	2,6±0,05	2,63±0,04
Total	0,15±0,06	1,18±0,05	1,93±0,05	1,77±0,04	0,97±0,04

65,89+ 0,67 and 16,96+1,15% respectively among patients of 65 years and older. Thus, only 17.15+0.87% of people of senile age didn't need dentures. These facts characterize needs in the orthopedic dental help.

CONCLUSIONS

The received results of research have shown adverse situation of caries incidence and pathologies of parodontium tissues, the insufficient level of medical help and high level of need

of dental help of the population in industrial regions. It dictates need of carrying out further researches for studying of biological and environmental risk factors of the development of pathological processes of organs and tissues of the oral cavity among residents of these areas for improvement of the dental help.

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Information about the authors and co-authors

1. Ushnitsky Innokentiy. D. MD., Professor, Head of Chair of medical, surgical, prosthetic dentistry and pediatric dentistry FGAOU Medical Institute HPE «North-Eastern Federal University named after MK Ammosov " Yakutsk, (Russia), e-mail: incadim@mail.ru, cell phone 89241708940

2. Semenov Alexander D. - chief doctor of dental clinics network "Adantis" (Yakutsk). E-mail: semenovs777@list.ru, cell phone 89142706767

3. Rogaleva Asmaa S.a - Ph.D., lecturer in medical, surgical, prosthetic dentistry and pediatric dentistry FGAOU Medical Institute HPE «North-Eastern Federal University named after MK Ammosov " Yakutsk (Russia). E-mail: Asma_stom@mail.ru, 89246636227

4. Degtyareva Alina M. - Dentist dental clinic therapist LLC "Terstrom". E-mail: Degtyareva_A@mail.ru, 89142252642

5. Egorov Roman A. - a student dental office FGAOU Medical Institute HPE «North-Eastern Federal University named after MK Ammosov "Yakutsk (Russia), e-mail: valentine_egorova@mail.ru, 89142628574.