

Caries of Croatian Army Recruits

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Summary

The object of this study is the occurrence of caries in Croatian Army recruits with regard to specific qualities of certain social communities. Caries was diagnosed in 190 recruits by means of DMFT index. Subjects were classified according to residence (urban, suburban, rural) and age. Healthy teeth were determined in 5 (2.6%) subjects. The average DMFT value was 7.76 (DT:2.03; MT:1.49; FT:4.25). Statistically significant difference was found between DT ($p = 0.009$) and FT ($p < 0.001$) values depending on residence. For rural environment the following values were established DT:2.59 and FT:2.87, and for urban environment DT:1.52 and FT:5.48. Subject values according to age were DMFT ($p = 0.008$), DT ($p < 0.001$), MT ($p = 0.022$) and FT ($p < 0.001$). The study of caries frequency in recruits is incentive for further systematic studies in smaller socio-economic groups and reveals the necessity for improvement in preventive program both during childhood and adolescence.

Key words: epidemiology, dental caries, recruits

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Introduction

According to an assessment of the World Health Organization caries and periodontal diseases are the most frequent diseases of modern man. The complexity of relationships of oral diseases, biological, economic, social and cultural factors is noticeable in many communities (1).

The frequency of caries is associated with the level of industrial and socio-economic development of a country. Nutritional habits (consumption of refined carbohydrates) are a significant risk factor. Epidemiological studies have shown a decline in caries frequency (Scandinavian countries, Western and Eastern European countries) (2-7).

The influence of social factors on the occurrence and incidence of dental caries is defined by non-uniform distribution of DMFT index values between subjects in different socio-economic communities. Specific socio-economic conditions in Croatia, as a transitional country, are important factors in the protection of oral health and the implementation of preventive measures for caries control (7-10).

Oral health of recruits is very often a subject of research in many countries (Australia, Czech Republic, Denmark, Germany, Italy and Switzerland (11-17)).

Therefore, we have attempted to compare caries occurrence in Croatian Army recruits with regard to different socio-economic conditions and age.

Subjects and research method

In the dental clinic/surgery in Koprivnica barracks 190 recruits aged between 19 and 27 year (average age 20.2) were randomly chosen. Subjects were classified according to residence (urban, suburban, rural) and age.

Caries was diagnosed by use of a classic probe and mirror as well as by use of a Kuhhorn probe. Radiographic examination was not used. Caries was described by caries index for decayed (D), missing (M) and filled (F) teeth (T), except wisdom teeth. The teeth with decay diagnosis corresponded to classification D_{2-4} according to Marthaler (18). According to this clinical classification caries lesions which can be determined by probing are included. Initial caries lesions were not considered.

Clinical examination included evaluation of dental status and was conducted, beginning with the lower right quadrant. The examination was performed by researchers who made previously standardization of criteria for clinical caries diagnostics in the barracks dental office. The reliability of obtained results was tested by random selection of 30 subjects in this study for repeated examination and evaluated by Choen kappa index ($\kappa = 0.75-0.84$).

Statistical analysis of data (average value, standard deviation, χ^2 -test, monophasic analysis of variance ANOVA) was processed by means of program package STATISTICA for Windows, Release 5.5 A

(StatSoft, Inc (1999). Tulsa, OK: StatSoft, Inc., 2300 East 14th Street, Tulsa, OK).

Results

DMFT index of the examined recruits is shown in Figure 1. Only 5 (2.6%) subjects with completely healthy teeth were determined (DMFT = 0). The average DMFT index was 7.76 ± 4.79 (DT: 2.03 ± 2.24 , MT: 1.49 ± 1.94 and FT: 4.25 ± 4.12).

Distribution of DMFT values according to residence of subjects is shown in Table 1. The subjects from a rural environment had more decayed teeth and urban subjects had more filled teeth (DT $p = 0.009$ and FT $p < 0.001$). There was no statistically significant difference between the groups with lower risk (DMFT = 0-4) and with higher risk for caries occurrence (DMFT ≥ 5) with regard to residence (χ^2 -test = 0.151).

Figure 2 DMFT index, divided by subjects' age, shows statistically significant difference in values: DMFT ($p = 0.008$), DT ($p < 0.001$), MT ($p = 0.022$) and FT ($p < 0.001$). The number of filled teeth increased with age of subjects and caries was more frequent in younger and more numerous age-groups.

Comparison between different residence groups with regard to dental treatment was made. There was no statistically significant difference between the residence of subjects and treatment (with fillings and/or prosthetic restoration) (Table 2).

Discussion

Analysis of the occurrence of dental caries enables comparison and assessment of dental health in different age and socio-economic groups, showing the necessity of implementation of preventive measures during preschool and school age.

DMFT index was used as an indicator of cumulative effect of caries on permanent teeth throughout life, while diagnosis by visual examination and probe proved a reliable clinical method (19). Radiological diagnostics were not used in this study. This standard could not be achieved for all subjects because of the specific conditions in which dental care of recruits is performed.

In many European countries epidemiological studies revealed an overall decrease of caries. Positive results of caries prevention, especially in children, have been confirmed in numerous Western European countries and in the USA. European countries in transition show significant difference in caries frequency. While in former Eastern Germany, Czech Republic and Slovenia a decrease in caries was achieved by a satisfactory/adequate preventive program, in Croatia an increase in caries in children has been recorded (7, 10, 20-24).

Numerous studies of recruit populations have been conducted in many countries. Morgan et al. (11) found in Australian recruits DMFT index 6.8, and Krejsa et al. (12) found DMFT values 6.22 (DT: 0.87, MT:0.02 and FT: 5.33) in Czech recruits. Antoft et al. (13) determined a decrease in caries of 63% in Danish recruits in the period between 1972 and 1993, while DMFT was reduced to 6.2. Willerhausen et al. (14) determined in German recruits a value of DMFT index 13.0, while Klimek et al. (15) showed in a later analysis a decrease on 7.5. In Italian recruits the determined DMFT was 7.14 (16). In a study of Swiss recruits the DMFT value was 5.06 and decrease in caries was 48% (17).

The results of studies in mentioned in European countries showed a significant reduction in caries in recruits, and the determined values of DMFT were mostly smaller than those determined in Croatian recruits.

Lobnik-Gomilšek (25) found a value of DMFT index 8.06 for enlisted recruits in federal republics of former Yugoslavia (for rural subjects 7.64, and for urban subjects 8.52). For Croatian recruits the DMFT value was 8.41 (DT: 3.87, MT: 1.15 and FT: 3.39) and was higher in the urban environment 8.54, compared to 8.2 for subjects living in the rural environment (DMFT: 8.2). Based on these results, the value of caries in Croatian recruits decreased by 7.7%. In portion of single values of DMFT it can be concluded that the number of decayed teeth was reduced by 48%,

while the number of filled teeth increased by 25%. The number of extracted teeth increased by 30%. There was no difference in the type or occurrence of dental treatment (with fillings and/or prosthetic restorations) between subjects of different residence.

Relatively high caries frequency was determined in the population of young men in Croatia and for the age range 19 to 29 years DMFT was 10.18 to 12.48 (26).

Epidemiological studies reveal valuable data on health conditions of different population groups, enabling reassessment of already conducted preventive measures and they provide the basis for the development and improvement of oral health. Direct comparison of data between different populations cannot be conducted without single studies of defined territories. In the development of health care systems in numerous European and world countries a vast amount of money has been invested in epidemiological studies for the purpose of improvement of oral health, particularly for the young population.

Conclusion

The aim of this study was to contribute to knowledge of the oral health of Croatian recruits. Healthy teeth were determined in 5 (2.6%) of subjects. The average value of DMFT was 7.76 (DT: 2.03; MT: 1.49; FT: 4.25). There was statistically significant difference between DT ($p = 0.009$) and FT ($p < 0.001$) values, depending on residence and the values of DMFT ($p = 0.008$), DT ($p < 0.001$), MT ($p = 0.022$) and FT ($p < 0.001$) for subjects classified according to age. The values of DMFT index in Croatian recruits were higher compared to identical populations in different countries. This study should be an incentive for systematic research of caries in defined territories with the aim of overcoming differences in diagnosis and treatment in countries in transition.