Program for Dental Health Advancement in Children „Dental Passport“

Program unaprijedenja dentalnog zdravlja djece Zubna putovnica

Introduction

Oral health is an integral part of overall health and an important indicator of a population’s health status. As an indicator of oral health, public health policy places special emphasis on health status during pre-school and school age and the implementation of preventive measures in the field of dental medicine (1). Dental caries is the most common oral cavity disease that affects 60-90% of schoolchildren and is a major public health problem (2). Knowledge on the occurrence and development of caries has led to a change in its treatment and made preventive, non-invasive procedures particularly important in reducing its prevalence. The best results are achieved with preventive activities to ensure good oral health. However, their purposefulness essentially depends on a structure that includes appropriate facilities.

Therefore, the deficiency of systems in preventive approach is the most common reason for unsuccessful pro-

Uvod

Oralno zdravlje neodvojiv je dio cjelokupnog zdravlja i pripada važnim pokazateljima zdravstvenog stanja populacije. Kao pokazatelj oralnoga zdravlja javnozdravstveno se posebno prati zdravstveno stanje u predškolskoj i školskoj dobi te provedba preventivnih mjer u području dentalne medicine (1). Zubni karijes najčešća je bolest usne šupljine koja zahvaća od 60 do 90 % školske djece i veliki je javnozdravstveni problem (2). Spoznaja o nastanku i razvoju karijesa dovela je do promjene u njegovu liječenju te su preventivni, neinvazivni postupci osobito važni u smanjenju njegove prevalencije. Preventivnim aktivnostima postižu se najbolji rezultati kako bi se osiguralo dobro oralno zdravlje, ali njihova svrhovitost presudno ovisi o strukturi koja se upotpunjuje sadržajima. Stoga je nedostatak sustava u preventivnom pristupu upravo najčešći razlog za neuspešne programe ili programe s nedovoljno mjerljivim učincima. U Hrvatskoj
grams, or programs with insufficiently measurable effects. In 1991, the reform of the health care system in Croatia resulted in the loss of systematic preventive and curative dental health care for children provided by pedodontics, which resulted in a decline in the quality of dental medical care in the pediatric population and high DMF index values (4.18 in 12-year-olds, 4.14 in 6-year-olds) (3). Excessive workload in regular daily routine and provision of dental health care at the elementary level, considering specific needs of the pediatric population, did not contribute to building a sustainable prevention system through organized preventive examination (4). Good practice in European countries such as Denmark has shown that a targeted proactive approach for providing and organizing preventive care within public health dental care has had significant results in improving the oral health of the Danish population. The average DMFT index in 12-year-olds decreased by 78%, from 4.5 to 0.98, in the period from 1974 to 2000. Establishing local clinical facilities to provide free and affordable dental health care to children and adolescents, with health education and preventive activities from infants to 18-year-olds, through organized written invitations to parents and response monitoring/ follow up are a good example of a successful dental program (5, 6). The systematic dental health care in other Scandinavian countries has given low DMF figures for 12-years-olds in Sweden (0.8) and Norway (1.7). The need to plan and implement a preventive dental program in Croatia with the purpose to improve the use of dental health care for children started with the pilot project called the “Dental Passport” in the school year 2016/2017 and the project became the national program. The aim of this study was to present the content and results of the implementation of the “Dental Passport” program and to analyse them with the focus on the sustainability and coverage of the program and its implementation in preventive activities and procedures.

je 1991. godine reformiran zdravstveni sustav te se pritom dogodio gubitak sustavne preventivne i kurativne dentalne zdravstvene zaštite djece koju su do tada pružali specijalisti dječije i preventivne dentalne medicine što je rezultiralo padom kvalitete javnozdravstvene skrbi dječje populacije i visokim KEZ indeksom (4,18 kod 12-godišnjaka, 4,14 kod 6-godišnjaka) (3). Prevelika opterećenost u svakodnevnom radu i pružanje dentalne zdravstvene zaštite na primarnoj razini s obzirom na specifične potrebe dječje populacije, nisu pridonijeli izgradnji održivog sustava prevencije putem organiziranih preventivnih pregleda (4). Primjer dobre prakse europskih zemalja, poput Danske, pokazao je kako je ciljani proaktivni pristup u pružanju i organizaciji preventivne skrbi unutar javnozdravstvene dentalne zaštite imao značajne rezultate u poboljšanju oralnoga zdravlja tamošnjeg stanovništva. Od 1974. do 2000. godine prosječni KEZ indeks kod dvanaestogodišnjaka smanjio se za 78 % – s 4,5 na 0,98. Osnivanje lokalnih kliničkih ustanova kako bi se djece i adolecentima pružila besplatna i dostupna dentalna zdravstvena zaštita, uz zdravstvenu edukaciju i prevenciju od novorodenčeta do 18-godišnjaka te organizirano pozivanje roditelja putem pisma i praćenje odaziva dobar su primjer uspješnog dentalnog programa (5, 6). Sustavna skrba o oralnom zdravlju u drugim skandinavskim zemljama rezultirala je niskim vrijednostima KEZ indeksa kod 12-godišnjaka (Švedska 0,8, Norveška 1,7). Potreba za planiranjem i provedbom preventivnog dentalnog programa u Hrvatskoj radi poboljšanja primjene dentalne zdravstvene zaštite djece počelo je s pilot-projektom pod nazivom Zuba putovnica u školskoj godini 2016./2017., a koji je od školske godine 2017./2018. postao nacionalni program. Školski liječnik upućuje na preventivni pregled doktoru dentalne medicine svu djecu u dobi od 6 i 12 godina. Program je osmišlien i implementiran na temelju Plana i programa mjera zdravstvene zaštite iz obveznog zdravstvenog osiguranja (NN126/2009) kojim su propisane specifične mjere promicanja zdravlja i prevencije bolesti karakterističnih za pojedine skupine, trudnice, dojenčad i djecu do 3 godine, predškolsku djecu (od 3. godine do polaska u školu), školsku djecu, mladež do 18 godina zatim odrasle i starije od 65 godina te uključuju sljedeće preventivne aktivnosti: redovite pregledove, zdravstveni odgoj, četkanje zuba preparatima fluora, evidenciju obveznih epidemioloških podataka prema naputku Švetske zdravstvene organizacije, s naglaskom na sustavnu preventivnu dentalnu zaštitu djece i mladeži (7). Cilj programa Zuba putovnica je organizirati sveobuhvatan preventivni stomatološki pregled (dentalni status, preventivni postupci, liječenje i praćenje) za svu djecu u dobi od 6 do 12 godina, sa stopom odgovora od 100 % u dobi od 6 godina i od 60 do 70 u dobi od 12 godina, u svrhu smanjenja KEZ indeksa, povećanja upotrebe preparata za fluoridaciju i remineralizacije te poboljšanja oralno-higijenskih navika kod djece. Svrha ovog rada je predstaviti sadržaj i rezultate provedbe programa te ih analizirati s naglaskom na održivost i obuhvatnost programa te provedbu preventivnih aktivnosti, odnosno postupaka.
Material and Methods

The data were collected from the completed “Dental Passports” forms between September 2017 and August 2018 (Figure 1). The 6th grade students (12 years old) and preschoolers enrolling in the 1st grade of elementary school (6 years old) had received the forms directly from the school medicine doctor or at school. During systematic examination when enrolling in the first grade of elementary school, the “Dental Passport” form is a part of the compulsory medical documentation collected by the school doctor. From 6th grade students, the form was collected during the following regular activities: Hepatitis B vaccination, spinal examination and control of height and weight (growth and development monitoring). After dental examination, the child / parent / guardian returned the completed form to the school medicine doctor. The collected forms were sent to the Croatian Institute of Public Health, where data were entered through a system for centralized information collection based on an open source project - Lime Survey (8).

In the school year 2016/2017, data were entered for all examined 6th grade students in Splitsko-Dalmatinska and Primorsko-Goranska County from those who had returned the completed forms. In the school year 2017/2018, samples were entered for 6th grade students and pre-schoolers enrolling in the 1st grade of elementary school from each county of Croatia. The data included the following: demographic data (age and sex), dental status (healthy tooth, caries, tooth extracted due to caries, filled tooth), preventive procedures, treatment and follow-up visits. The dental examinations and diagnostic-therapeutic procedures were recorded in the Central Health Information System of Croatia during clinical examinations carried out by dental practitioners who were contractors of the Croatian Health Insurance Fund.

Results

In the school year 2016/2017, out of the 6,994 planned 6th grade students, 51.6% were examined in the Splitsko-Dalmatinska and Primorsko-Goranska County. According to the CEZIH data, between September 1 and December 31, 2015, there was a total of 5,761 dental inspections of 12-year-old children. For the same period in 2016, the number of dental consultations was 9,648 and 11,911, respectively, in 2017. The number of preventive procedures (topical fluoridation, motivation and demonstration of tooth brushing, fissure sealing per tooth, sealing restorations) in twelve-year-olds in 2016 increased by 118% compared to the same period in 2015, and by 19% in 2017 compared to 2016 (Figure 2). In the school year 2017/2018 (20 counties and City of Zagreb), out of the total number of 6th grade students, 98.8% of them received the form directly from the school medicine doctor or at school in September 2017. In the period from September 2017 to June 2018, out of 3,184 students, 24,729 have visited dentists, with the response rate of 68% for the Republic of Croatia. The analysis showed that the numbers of 6th-grade students in that period ranged from almost complete examinations by dentists (Krapinsko-Za-

Materijali i postupci

Podatci su prikupljeni iz ispunjenih obrazaca Zubna putovnica u razdoblju od rujna 2016. do lipnja 2018. godine (slika 1.). Obrase su učenici 6. razreda osnovne škole (dob: 12 godina) i pri upisu u 1. razred osnovne škole (dob: 6 godina) dobili od doktora školske medicine izravno ili od škole. Tijekom sistematskog pregleda pri upisu u prvi razred osnovne škole obrazac Zubna putovnica je dio obvezne medicinske dokumentacije koju je prikupljava doktor školske medicine. Kod učenika 6. razreda obrazac se prikupljava na sljedećim redovitim aktivnostima: cijepljenju protiv hepatitisa B te pregledu kralježnice, visine i mase (praćenje rasta i razvoja). Nakon obavljenog pregleda kod doktora dentalne medicine, ispunjeni obrazac je dijete/roditelj/skrbnik vratio doktoru školske medicine. Prikupljeni obrasci dostavljeni su Hrvatskom zavodu za javno zdravstvo gdje su se podaci unosili u sustav za centralizirano prikupljanje informacija utemeljen na projektu otvorenog koda – Lime Survey (8). U školskoj godini 2016./2017., unosili su se podatci za sve pregledane učenike 6. razreda u Splitsko-dalmatinskoj i Primorsko-goranskoj županiji koji su vratili ispunjeni obrazac, a u 2017./2018. unosili su se uzorci iz svake županije Republike Hrvatske za učenike 6. razreda i za upis u 1. razred osnovne škole. Podatci su uključivali sljedeće: demografske podatke (dob i spol), dentalni status (zdravi zub, karijes, zub izvađen zbog karijesa, zub s ispunom), preventivne postupke te podatke o liječenju i idućem, odnosno kontrolnom posjetu. Pregledi i dijagnostičko-terapijski postupci (DTP) također su se bilježili u sklopu Centralnoga zdravstvenog informacijskog sustava (CEZIH) tijekom posjeta i kliničkog pregleda djece u ordinacijama dentalne medicine koje su imale sklopljene ugovore s Hrvatskim zavodom za zdravstveno osiguranje (ugovorni subjekti HZZO-a). Rezultati su obrađeni u programu Microsoft Access 2.0. te su prikazani tablično i grafički.
Discussion

In 1995, the World Health Organization adopted the Global School Health Initiative to promote health care through schools, which included oral health care (9). Global-ly, about 80% of children attend school. Hence, schools represent a suitable environment for access to almost all population groups of children and the opportunity to play a role in national development and efforts to improve health and education among children and adolescents (10). Within the public health system of the Republic of Croatia, school medicine implements preventive, specific and health education measures, as defined in the Program for Preventive and Educational Measures for health protection of schoolchildren, which is a part of the plan and the program of health care measures covered by compulsory health insurance. (7). Considering poor oral health status in children and insufficient organized dental examinations in the Republic of Croatia, school medicine became an important specialty and link in the implementation of oral health care measures through schools, fostering parental/guardian responsibilities for regular screening and preventive procedures. The increase in the

Rasprava

Svjetska zdravstvena organizacija je 1995. godine prihva-
tila inicijativu WHO’s Global School Health Initiative kako bi promicala zaštitu zdravlja kroz škole, a u koju je uvrštena i zaštita oralnoga zdravlja (9). Na globalnoj razini oko 80 % djece pohađa školu pa su škole prikladno okružje zbog pri-
stupe gotovo cjelokupnim populacijskim skupinama djece i mogućnosti da pomognu u nacionalnom razvoju i napori-
ma za poboljšanje zdravlja i edukacije među djecom i adol-
centima (10). U Republici Hrvatskoj, u sustavu javnoga zdravstva, školska medicina provodi preventivne, specifične i zdravstveno odgojne mjere zdravstvene zaštite školske djece koje su odredene Programom mjera za djelatnost preventivno-
no-odgojnih mjera za zdravstvenu zaštitu školske djece iz Pla-
na i programa mjera zdravstvene zaštite iz obveznog zdrav-
stvenog osiguranja (NN126/2009). S obzirom na loše oralno zdravstveno stanje djece i nedovoljno organizirane stomato-
loške pregledne u Republici Hrvatskoj, školska medicina po-
stala je važna specijalnost i karika u provedbi mjera zaštite oralnoga zdravlja kroz škole te poticanja odgovornosti roditel-
ja/škrunika na redovite pregledne i preventivne postupke. Po-
number of visits and preventive procedures for twelve-year-olds in 2016 and 2017 compared to the same period in 2015 indicates the importance of implementation of the screening program through the education system that shows that regular oral health assessment is more effective than the standard dental care model (11). The aim of programs involving schoolchildren is not only to identify children with oral health problems, but also to encourage children to contact the dental health services for regular check-ups (12). Praveen et al. reported an increase in the number of examinations and procedures in children enrolled in school dental programs compared to non-school children (13). Donaldson and Kinirons reported similar results in the study conducted among children in Northern Ireland, with emphasis on school dental programs and their role in reducing health inequalities, especially in lower socioeconomic status (14). Sometimes, schools can also be the only place where children at highest risk of hard and soft tissue diseases of the oral cavity have access to oral health services, especially in developing countries due to inaccessibility and lack of dental care (15).

The inclusion analysis of examination of twelve-year-olds shows a low rate, especially in the City of Zagreb, where the use of dental health care should be satisfactory given the number of contracted teams and the availability of health compared to Zadarska county and the potential poorer accessibility given the county’s divergence. In the Republic of Croatia, free dental care is provided for all children until the age of 18, which should be motivating, taking into account socioeconomic factors and the need for expensive treatment. Almost 50% of children (0-7 years old) do not exercise the right to dental health care and enrolment for school is often the reason for the first visit to the dentist (4). The high percentage of pre-school children who require dental treatment in relation to the number of healthy children indicates the need for enhanced implementation of diagnostic and therapeutic procedures, especially for a therapeutic treatment of a new permanent tooth with existing caries. It is a critical period of risk for caries, especially since permanent molars in eruption do not have functional occlusal contact, which affects the accumulation and retention of dental plaque in fissures of the occlusal surfaces of the teeth and the action of acids on immature enamel. Adolescence is the second period of risk for caries due to poor oral hygiene and carbohydrate-rich foods with a high cariogenic potential. The most common reported preventive procedures for 6th grade pupils in the Dental Passport Program such as motivation for oral hygiene, demonstration of tooth cleaning and fluoride prophylaxis were justifiably applied in clinical practice, although at that age there is also a need for fissure sealing or sealing restoration based on individual assessments during control examination. A low number of topical fluoridations was noted in preschool children with respect to the recommended two to four times a year, as well as the number of fissure sealing, which should be the rule, not an exception with respect to the number of preschool children requiring treatment given the relatively high incidence of caries (16, 17). Increase in number of dentist examinations through an organized and targeted program enables monitoring of oral health indica-
tors and application of various preventive procedures such as motivation and patient education on oral hygiene, professional mechanical tooth cleaning, the use of preparations for chemical prophylaxis and plaque control, topical fluoridation and fissure sealing and other non-invasive procedures. These procedures are recommended in childhood because they defer the development and progression of dental concern and anxiety, and show effectiveness in reducing caries.

There are studies assessing the most effective and unbiased public health intervention for caries prevention. They place emphasis on the basic principle of prevention, which states that the most efficient intervention occurs when the risk of a disease is the highest. Hausen et al. reported reduced incidence of caries in children with active caries in their study conducted among Finnish children, when a number of preventive measures had been implemented (18). Considering the need to implement preventive measures in order to immediate putem organiziranog i ciljanog programa omogućuje praćenje pokazatelja oralnoga zdravlja i primjenu različitih preventivnih postupaka kao što su motivacija i edukacija pacijenata o oralnoj higijeni, profesionalno mehaničko čišćenje zuba, primjena sredstava za kemijsku profilaksu i kontrolu plaka, topikalna fluoridacija i pečaćenje fisura te ostali neinvazivni postupci. Navedeni postupci mogu se preporučiti u dječjoj dobi zato što ne potiču razvoj i progresiju dentalnog straha i anksioznosti, a učinkovito smanjuju karijes. Poštovanje principa prevencije, kojim se najučinkovitija intervencija objašnjava, ta je najučinkovitija kada je rizik od nastanka bolesti najveći. Hausen i suradnici u svojoj studiji koja je provedena među finskom dječijom populacijom, navode smanjenje incidencije karijesa kod djece s aktivnim karijesom, ali uz niz provedenih preventivnih mjera (18).
Figure 2. Trends in numbers of diagnostic-therapeutic procedures (CEZIH)

Slika 2. Prikaz kretanja broja dijagnostičko-terapijskih postupaka (CEZIH)

Figure 3. Examined 6th grade students according to counties

Slika 3. Udio pregledanih učenika 6. razreda prema županijama

Figure 4. Preventive procedures for 6th grade students according to sex (Dental Passport Form)

Slika 4. Preventivni postupci kod učenika 6. razreda prema spolu (obrazac Zubna putovnica)

Figure 5. Preventive procedures for 6th grade students in 2015 vs in 2017 (CEZIH)

Slika 5. Broj preventivnih postupaka 2015. vs. 2017. kod učenika 6. razreda (CEZIH)

Figure 6. Preventive procedures in preschool children according to sex at enrolment into 1st grade of elementary school (Dental Passport Form)

Slika 7. Preventivni postupci kod predškolske djece prema spolu pri upisu u 1. razred osnovne škole (obrazac Zubna putovnica)
prove oral health in children through the Dental Passport program, Croatia begins not only with the revitalization of dental health care in schoolchildren but also in oral health education. Oral health education in an educational setting combined with professional dental preventive care has been shown to produce effective results in reducing dental caries in children. Teaching children how to practice good oral hygiene, with demonstration of brushing techniques and exercises can, except in clinical practice, be performed in schools and it may include daily supervised toothbrushing with fluoride toothpaste. According to the Curriculum for Health Education for Elementary and Secondary Schools within the module “Living Healthy in the Republic of Croatia”, nurses from school medicine teams educate children in the first grades of elementary school about proper tooth brushing (19). In the school year 2018/2019, Republic of Croatia launched a pilot project and developed the National Standards for Supervised Toothbrushing in Kindergartens and Primary Schools (20). The results of the Dental Passport program reveal sustainable implementation of dental examinations and preventive procedures in schoolchildren, but there is a need to include preschool children in regular dental check-ups through the Dental Passport program when enrolling in nursery and to implement other prevention measures that include regular oral hygiene, fluoride prophylaxis, proper nutrition and health education in order to decrease the prevalence of caries in children.

Conclusion

Good organization of work in school medicine provides the basis for the implementation of dental programs involving school children. The results of the Dental Passport program acknowledge sustainable implementation of dental examinations and preventive procedures in schoolchildren, but there is a need to include preschool children in regular dental check-ups through the Dental Passport program when enrolling in nursery and to implement other prevention measures that include regular oral hygiene, fluoride prophylaxis, proper nutrition and health education in order to decrease the prevalence of caries in children.

Conflict of interest

None declared

Zaključak

Dobra organizacija rada u školskoj medicini pruža osnovu za provedbu dentalnih preventivnih programa koji uključuju školsku djecu. Rezultati programa Zubna putovnica pokazuju održivu provedbu dentalnih pregleda i preventivnih postupaka kod školske djece. No postoji potreba za uključivanjem predškolske djece u redovite pregledne programe, dok se u okviru programa Zubna putovnica i CEZIH usmjerio na razvoj konsistentnih nacionalnih baza podataka o oralnom zdravlju i karijesu, a prema njegovu uspostavljanju i planiranju daljnjih aktivnosti. Ostale važne odrednice u daljnjem provedbi su veća motiviranost pružatelja dentalne zdravstvene zaštite te motiviranost roditelja i pacijenata za aktivnije uključivanje u program Zubna putovnica.

Sukob interesa

Autori nisu bili u sukobu interesa.
Sažetak

Cilj: Potreba za poboljšanjem oralnog zdravlja u Republici Hrvatskoj temeljila se na zdravstvenim pokazateljima i lošem stanju oralnog zdravlja te je rezultirala provedbom mjera za poboljšanje koristanja dentalne zdravstvene zaštite školske djece na temelju nacionalnog programa Zubna putovnica s kojim se počelo u školskoj godini 2017./2018. Svrha ovog rada bila je predstaviti sadržaj i rezultate provedbe programa te ih analizirati s naglaskom na održivost i obuhvatanost programa te provedbu preventivnih aktivnosti, odnosno postupaka. Materiaj i metode: Podatci su prikupljeni iz ispunjenih obrazaca Zubna putovnica od rujna 2017. do kolovoza 2018. godine. Pregled i dijagnosticito-terapijski postupci (DTP) bili su u sklopu Centralnoga zdravstvenog informacijskog sustava Republi- ke Hrvatske. Rezultati: U školskoj godini 2017./2018. doktora dentalne medicine posjetilo je 24.729 učenika 6. razreda, sa odazivom od 68 % za Republiku Hrvatsku. Prema podacima CEZIH-a u razdoblju od 1. rujna do 31. prosinca 2017. godine kod djece u dobi od 12 godina zabilježeno je povećanje broja prvin pregleda i dijagnosticito-terapijskih postupaka u odnosu prema istom razdoblju 2015. Najrje- de zabilježen je broj pregleda kod predškolske djece u učenika 6. razreda bili su pečatni ispuni, a demonstracija čišćenja usta i motiviranje djece na higijenu uža bili su najčešći. Zaključak: Doba organizacija rada u djelatnosti školske medicine daje osnovu za provedbu dentalnih programa u koje se uključuje školsku djecu, ali su također veća motiviranost pružatelja dentalne zdravstvene zaštite u provedbi preventivnih postupaka te motiviranost roditelja i pacijen- ta za aktivnije uključivanje u program Zubna putovnica, važne odrednice u daljnjoj provedbi i pobolj- šanju oralnog zdravlja djece.

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Zubna putovnica

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