

Prevalenca karijesa kod adolescenata u Istočnoj Bosni-opština Foča

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Caries prevalence in adolescents in Eastern Bosnia – Foca municipality

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Karijes predstavlja najčešće oralno oboljenje u svim starosnim grupama.

Cilj: Cilj ovog rada je bio da se provjeri stanje zuba i ispita prevalenca karijesa u srednjoškolaca u regionu Istočne Bosne, u opštini Foča.

Materijala i metod: Ispitivanje je obuhvatilo 300 učenika srednjih škola, oba pola, uzrasta 15-18 godina, u opštini Foča. Stomatološki pregled je obavio jedan stomatolog uz korišćenje dnevnog svetla i primjenom stomatološkog ogledalca i stomatološke sonde. Prevalenca karijesa je analizirana pomoću KEP indeksa.

Rezultati: Dobijeni rezultati su pokazali da dominantnu komponentu KEP-a čine restaurisani (51.7%) i karijesom zahvaćeni zubi (36.8%) dok je ekstrahovanih zuba bilo najmanje (11.8%). Inicijalnim karijesom najčešće su bili zahvaćeni gornji (48%) i donji (39.7%) molari, a najrjeđe donji frontalni zubi (8.4%). Duboki karijes je najčešće otkriven na gornjim (35.7%) i donjim (33.3%) molari-ma, a najrjeđe na donjim frontalnim zubima (3.3%).

Zaključak: Srednjoškolci u regionu Istočne Bosne (opština Foča) imaju veliki broj karijesnih i nesanimiranih zuba, pa je neophodna implementacija sistema primarne zdravstvene zaštite i nalaženje rešenja za ovaj problem.

Ključne reči: karijes zuba, epidemiologija.

Karijes predstavlja jedno do najčešćih oralnih oboljenja, ne samo djece i adolescenata, već i svih starosnih grupa. Posljednih godina, rezultati brojnih epidemioloških studija, u populaciji djece, pokazuju da je „tihan“ epidemija karijesa zaustavljena u zemljama Zapadne Evrope i USA.¹⁻

SUMMARY

Caries is the most frequent oral disease in all age groups.

Aim: The aim of this study was to determine dental status and caries prevalence in adolescents in the Eastern Bosnian region, in Foca municipality

Materials and methods: The study comprised 300 pupils of secondary schools, of both sexes and aged between 15 and 18 in Foca municipality. Dental check-up was conducted by a single dentist using daylight, dental mirror and dental probe. Caries prevalence was analyzed using the DMFT index.

Results: Results showed that the dominant components of DMFT were filled (51.7%) and decayed teeth (36.8%) while extracted teeth were least frequent (11.8%). Initial caries was observed most frequently in upper (48%) and lower (39.7%) molars and least frequently in lower anterior teeth (8.4%). Deep caries lesions were most often found in upper (35.7%) and lower (33.3%) molars and rarely in lower anterior teeth (3.3%).

Conclusion: Adolescents in Eastern Bosnia (Foca municipality) have great number of carious and unrestored teeth and, therefore, the implementation of primary dental healthcare system is necessary as well as looking for a solution to this problem.

Keywords: dental caries, epidemiology

Caries is one of the most frequent oral diseases, not only in children and adolescents, but also in other age groups. During last several years, numerous epidemiological studies in children's population have shown that «silent» epidemics has been stopped in Western Euro-

⁴ Razlozi ovakvog unaprijeđenja oralnog zdravlja su brojni i kompleksni, ali se najčešće pripisuju: sprovođenju sistematskih školskih preventivnih programa i programa zdravstvenog prosvjećivanja, zatim masovnoj i kontinuiranoj primjeni fluorida, poboljšanoj oralnoj higijeni, osjetljivijem pristupu uzimanja šećera, kao i promjenama životnog stila i uslova života.⁵ S druge strane, analizom novijih publikacija o rasprostranjenosti karijesa u populaciji djece, adolescenata i odraslih, zapaženo je da u zemljama Istočne i Centralne Evrope, karijes i dalje predstavlja veliki zdravstveni i socijalni problem.^{1,5} Na prostorima Istočne Bosne ovaj problem je još izraženiji zato što u ovom regionu, do sada, ovakve studije nisu rađene, a s druge strane, što je ovo područje prije više od 10 godina bilo poprište ratnih zbivanja.

Cilj ovog rada je bio da se provjeri stanje zuba i ispita prevalenca karijesa u srednjoškolaca u regionu Istočne Bosne, u opštini Foča.

Materijal i metod

Studija je obuhvatila 300 učenika srednjih škola, oba pola, uzrasta od 15 do 18 godina u opštini Foča. Ovaj uzorak predstavlja 45% populacije srednjoškolaca u ovoj opštini, gdje se u posljednje četiri godine intenzivno sprovodi zdravstveno prosvjećivanje školske djece, radi zaštite od karijesa, odnosno relizuju različiti preventivni programi protiv karijesa.

Ispitanici u ovoj studiji su izabrani metodom slučajnog uzorka. Stomatološki pregled je izveo jedan stomatolog u prostorijama srednjoškolskog centra, pri čemu je korišćeno dnevno osvijetljenje, ravno stomatološko ogledalce i oštra stomatološka sonda.

Prevalenca karijesa je prikazana pomoću KEP indeksa i njegovih komponenti: K (broj karioznih zuba), E (broj ekstrahovanih zuba) i P (broj plombiranih zuba). Karijes je dijagnostifikovan ukoliko je vizuelno uočena već formirana karijesna šupljina ili područje sa vidljivim promjenama na gleđi. U slučajevima sumnje na postojanje karijesa u fisurama i jamicama bočnih zuba, vršeno je pažljivo ispitivanje oštrom stomatološkom sondom. Zavisno od progresije, karijes je registrovan kao KI- površinski karijes, KII- duboki karijes ili kao Kp, ako je riječ o karijesnom procesu koji je zbog svoje progresije doveo do ekspaniranja komore pulpe zuba.

Rezultati

Analizom podataka, za populaciju adolescenata 15-18 godina starosti, dobijene su vrijednosti KEP-a od 10.8±3.91. Dominantnu komponentu KEP indeksa čine restaurisani (51,7%) i karijesno promjenjeni zubi (36,8%) (graf. 1) dok je najmanje ekstrahovanih zuba (11,8%).

pean countries and the USA.¹⁻⁴ There are many, often complex, reasons for this oral health improvement, such as systemic preventive programs in schools, health education programs, wide and continuous use of fluorides, improved oral hygiene, greater care in sugar consumption and changes in life style and conditions.⁵ On the other hand, the analysis of recent publications on caries distribution in children, adolescents and adults has revealed that caries remains a substantial health and social problem in Eastern and Central European countries.¹⁻⁵ In the region of Eastern Bosnia, this problem is even more prominent because there have been no such studies so far and, on the other hand, because this region faced a war more than 10 years ago.

The aim of this study was to determine dental health status and caries prevalence in adolescents in the Eastern Bosnian region, in Foca municipality

Materials And Methods

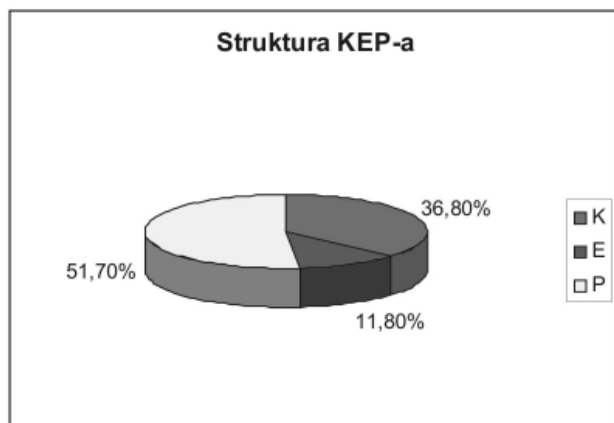
The study comprised 300 pupils of secondary schools, of both sexes and aged between 15 and 18 in Foca municipality. This sample represents 45% of the whole adolescent population in this municipality where there has been an on going intensive health education program among school children aimed at protection against caries. Adolescents were chosen randomly.

Dental check-up was conducted by a single dentist in school facilities using daylight, flat dental mirror and sharp dental probe.

Caries prevalence was presented through the DMFT index and its components: D (the number of decayed), M (the number of missing) and F (the number of filled) Teeth. Caries was diagnosed if there was an already formed cavity in the tooth or a spot with visible changes in enamel. In cases with uncertainty of caries in posterior teeth pits and fissures, a careful examination with a sharp probe was carried out. Depending on the progression, caries was marked as KI – superficial caries, KII – deep caries or Kp – caries that has caused pulp exposure.

Results

Data analysis has revealed that the mean DMFT value was 10.8±3.91 in adolescent population aged 15-18. The dominant components of the DMFT index were filled (51.7%) and decayed (36.8%) teeth (graph 1) while extracted teeth were least frequent (11.8%).



Grafikon 1: Struktura KEP-a
Graph 1. DMFT index structure

Rezultati ovog istraživanja su pokazali da su inicijalnim karijesom (KI) najčešće zahvaćeni maksilarni (48%) i mandibularni molari (39.7%), a najrjeđe zubi frontalnog regiona donje vilice (8.4%).(Tab. 1 i graf. 2)

Initial (superficial) caries (KI) was most often seen in maxillary (48%) and mandibular molars (39.7%) and least frequently in lower anterior teeth (8.4%) (table 1 and graph 2).

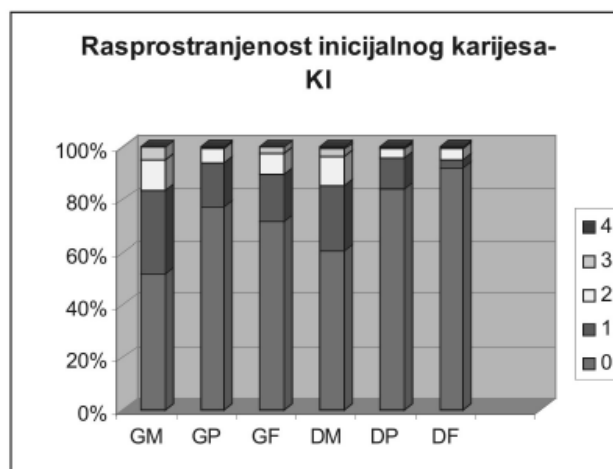
Tabela 1. Rasprostranjenost inicijalnog karijesa - KI (caries superficialis)

Table 1. Distribution of initial caries – KI (superficial caries)

morfološke grupe zuba	broj zuba zahvaćenih karijesom					svoga
	0	1	2	3	4	
GM	52,0%	31,3%	11,7%	4,7%	0,3%	100%
GP	77,0%	17,0%	5,3%	0,7%	0	100%
GF	71,7%	17,7%	8,0%	2,3%	0,3%	100%
DM	60,3%	25,0%	11,0%	2,7%	1,0%	100%
DP	84,0%	11,7%	3,3%	0,3%	0,7%	100%
DF	91,6%	3,3%	4,3%	0,7%	0	100%

Legenda: GM-gornji molari, GP-gornji premolari, GF-gornji frontalni zubi, DM-donji molari, DP-donji premolari, DF-donji frontalni zubi

Legend: GM – upper molars, GP – upper premolars, GF – upper anterior teeth, DM – lower molars, DP – lower premolars, DF – lower anterior teeth



Grafikon 2. Rasprostranjenost inicijalnog karijesa - KI
Graph 2. Distribution of initial caries - KI (superficial caries)

Duboki karijes (KII) se kod pregledanih učenika srednje škole najčešće javlja na gornjim (35.7%) i donjim molarima (33.3%), dok su donji frontalni zubi (3.3%) najrjeđe zahvaćeni dubokim karijesom.(Tab.2 i graf. 3)

Proučavajući rasprostranjenost broja zuba zahvaćenih karijesnim procesom koji je zbog progresije doveo do ireverzibilnih oštećenja pulpe (Kp) i posljedičnih komplikacija (pulpitis, gangrena itd.), kod najvećeg broja pregledanih (15.7%) je registrovan samo po jedan zub sa ovakvom promjenom. (graf. 4)

In examined schoolchildren, deep caries was most frequent in upper (35.7%) and lower molars (33.3%) while lower anterior teeth (3.3%) were least frequently exposed to deep caries (table 2 and graph 3). The analysis of distribution of teeth with caries accompanied by irreversible pulp destruction (Kg) and subsequent complications (pulpitis, gangrene etc.) showed that 15.7% of children had only one such tooth (graph 4).

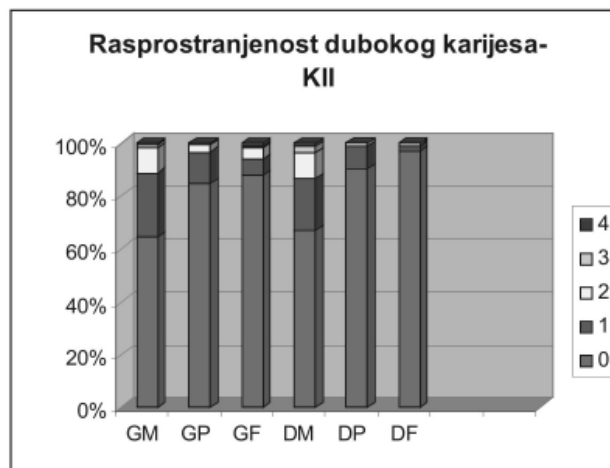
Tabela 2. Rasprostranjenost dubokog karijesa-KII (caries profunda)

Table 2. Distribution of deep caries – KII (deep caries)

morfološke grupe zuba	broj zuba zahvaćenih karijesom					svega
	0	1	2	3	4	
GM	64,3%	24,3%	9,7%	1,0%	0,7%	100%
GP	84,7%	12,0%	2,7%	0,7%	0	100%
GF	87,7%	6,3%	4,0%	0,7%	1,3%	100%
DM	66,7%	19,7%	10,0%	2,3%	1,3%	100%
DP	90,0%	8,7%	1,3%	0	0	100%
DF	96,7%	2,0%	0,3%	1,0%	0	100%

Legenda / Legend: GM-gornji molari, GP-gornji premolari, GF-gornji frontalni zubi, DM-donji molari, DP-donji premolari, DF-donji frontalni zubi

Legend: GM – upper molars, GP – upper premolars, GF – upper anterior teeth, DM – lower molars, DP – lower premolars, DF – lower anterior teeth



Grafikon 3. Rasprostranjenost dubokog karijesa-KII
Graph 3. Distribution of deep caries - KII (deep caries)



Grafikon 4. Rasprostranjenost komplikacija karijesa – Kp
Graph 4. Distribution of caries complications - Kp

Diskusija i zaključak

Za analizu prevalencije karijesa pojedinca i populacije najčešće se koristi KEP indeks. Ovaj indeks je primjenjen i u ovoj studiji zato što je jednostavan, brz i univerzalan dijagnostički metod za procijenu stanja zuba.⁶ Rezultati ovog istraživanja pokazuju da je stopa prevalencije dentalnog karijesa kod adolescenata u regionu Istočne Bosne- opština Foča i dalje visoka, kao i u većini zemalja Istočne i Centralne Evrope.

Obradom dobijenih podataka utvrđena je da KEP u adolescenata (opština Foča) iznosi 10.8. Ove vrijednosti su u saglasnosti sa nalazima iz studija o prevalenciji karijesa zemalja Evrope i svijeta od prije nekoliko decenija^{2,7,8}, a razlikuju se od rezultata skorijih istraživanja.

Discussion and Conclusion

In caries prevalence analysis, either in individuals or populations, the most frequently used is the DMFT index. This index has been used in the present study because it is a simple, quick and universal diagnostic method for determination of dental health status.⁶ The results of this study suggest that caries prevalence rate in adolescents in Eastern Bosnia – Foca municipality is still high, as in most Eastern and Central European countries.

The obtained values are in accordance with previous studies on caries prevalence in European countries and the USA, conducted several decades ago^{2,7,8} while they are different from recent data.

Kakvo je zdravlje zuba kod ispitane populacije adolescenata, to jest da li je došlo do unaprijeđenja ili pogoršanja, teško je donijeti zaključak jer ne postoje podaci i ranije studije sa ovih prostora, a time i realni parametri za komparaciju. Međutim, ako se izvrši poređenje sa sličnim studijama iz okruženja ali i šire, dobija se jedna, nimalo ohrabrujuća slika.

U Sloveniji (do 1991. godine bila je jedna od republika SFRJ, kao i BiH) došlo je do pada prevalencije karijesa za grupu petnaestogodišnjaka i osamnaestogodišnjaka. Naime KEP indeks je smanjen sa 10.2 (1987. godine) na 4.3 za petnaestogodišnjake, odnosno sa 12.9 na 7.0 za osamnaestogodišnjake (1998. godine).⁹ Analiza ove epidemiološke studije pokazuje da je razlog ovog značajnog pomaka implementacija preventivnih programa u različitim periodima i to prije svega kontrolisanog pranja zuba (sa koncentrovanim fluoridnim gelovima), poboljšanjem oralne higijene i preventivnim zalivanjem fisura.

U svom istraživanju, Von der Fehr je pokazao da je KEP kod petnaestogodišnjaka 3.1 a kod osamnaestogodišnjaka 5.3.¹⁰ u Nordijskim zemljama. Primjena fluorida u različitim oblicima i preventivni programi oralnog zdravlja smatraju se odgovornim za inicijalno smanjenje prevalencije karijesa. Slično smanjenje je uočeno i u drugim sjevernoevropskim zemljama Danskoj, Norveškoj i Švedskoj.¹⁰

Za iste starosne grupe, u Češkoj, dobijene su vrijednosti KEP-a od 5.0¹¹ i 6.2.¹² Zabilježeni pad prevalencije karijesa, posljednih decenija, se pripisuje fluorizaciji vode za piće, primjeni tableta sa fluoridima i lokalno aplikaciji fluorida. Pozitivan trend pada prevalencije karijesa uočen je i u Mađarskoj. Rezultati studije pokazuju da je KEP kod osamnaestogodišnjaka 7.6.¹³ Pozitivne promjene u oralnom zdravlju, u ovoj zemlji, javile su se paralelno sa implementacijom preventivnih programa i edukacijom o oralnom zdravlju.

Na osnovu dobijenih rezultata u ovoj epidemiološkoj studiji i poređenjem sa sličnim studijama može se zaključiti da u ovom regionu Istočne Bosne (opština Foča) zdravlje zuba predstavlja veliki zdravstveni i socijalni problem. Ovakav nalaz predstavlja, na neki način i alarm upozorenja za sistem zdravstvene zaštite ali i za cijelo društvo. Ipak, treba naglasiti da nivo oralnog zdravlja mora biti različito interpretiran u različitim zemljama, zbog uticaja društveno-ekonomskih karakteristika i stanja razvijenosti njihovih zdravstvenih sistema. Sistemi stomatološke zdravstvene zaštite u regionu Istočne Evrope su u tranziciji nakon dramatičnih ekonomskih i političkih promjena. Posmatrajući stanje u BiH, zdravstveni sistem je bio centralizovan, organizovao ga je socijalistički samoupravni sistem i finansiran je na nivou bivše SRBiH.¹⁴ Ratna zbivanja u periodu od 1991-95 godine, praćena masovnim razaranja i migracijama stanovništva, kao i posljednji period su, dalje, ostvarili dominantan uticaj na sve sfere društvenog i javnog života, a samim tim i na sistem zdravstvene zaštite, koji je jedva mogao da zadovolji osnovne zdravstvene potrebe stanovništva.¹⁵ Uvažavajući teškoće i probleme u

It is difficult to conclude whether there have been improvements in adolescents' dental health or not because there are no previous studies for comparison. However, when compared to similar studies in neighboring regions and wider, the picture is not encouraging at all.

In Slovenia (one of Yugoslav republics until 1991 as well as BiH), there has been a decrease in caries prevalence in 15-year- and 18-year old adolescents. The DMFT index has dropped from 10.2 (in 1987) to 4.3 in 15-year-olds and from 12.9 to 7.0 in 18-year-olds (in 1998).⁹ The reason for such an important improvement was the implementation of preventive programs in various periods, and controlled tooth brushing in particular (with concentrated fluoride gels), but also oral hygiene improvement and preventive fissure sealing.

In his research, Von der Fehr has shown that DMFT in 15-year-olds was 3.1 and 18-year-olds 5.3 in Nordic countries.¹⁰ Fluoride application in various forms and preventive oral health programs are considered responsible for an initial decrease in caries prevalence. Similar decrease was observed in other North European countries Denmark, Norway and Sweden.¹⁰

In the same age groups in the Czech republic, DMFT values were 5.0¹¹ and 6.2.¹² A drop in caries prevalence in the recent decades has been explained by water fluoridation, the application of fluoride tablets and topical use of fluorides. This positive trend in caries prevalence decrease has been noticed in Hungary as well. One study has shown DMFT in 18-year-olds to be 7.6.¹³ Positive changes regarding oral health in this country have occurred parallel to the implementation of preventive programs and oral health education.

The present study leads to a conclusion that dental health in this region of Eastern Bosnia (Foca municipality) remains a substantial health and social problem. In a way, these findings are a warning alarm for the healthcare system and the whole society. However, it should be stressed that oral health levels must be interpreted differently in different countries, due to the influence of socio-economic characteristics and levels of development of various healthcare systems. Dental healthcare systems in Eastern European regions are in transition after dramatic economic and political changes. In Bosnia and Herzegovina, the healthcare system used to be centralized, organized by socialist self-governing system and financed on the level of the former Yugoslav republic BiH.¹⁴ The war between 1991 and 1995 with mass destruction and migrations of population, along with the post-war period have had a dominant impact on all aspects of social and public life, as well as healthcare system which could barely meet even the basic medical needs of the population.¹⁵ Taking into account all difficulties and socio-economic

socialno- ekonomskom razvoju ove zemlje i stanja stomatološkog zdravstvenog sistema, neophodno je da se stomatološka zdravstvena zaštita prilagodi specifičnim uslovima sredine, uz poštovanje ekonomskih mogućnosti zajednice, stepen razvitka stomatološke djelatnosti, prisutne resurse, kao i postojeću oralnu patologiju. U organizovanju i planiranju oralne zdravstvene njege veoma su potrebni i sistematski podaci. Međutim, u većini zemalja Centralne i Istočne Evrope epidemiološka tradicija je relativno slaba i redovna nacionalna ili regionalna istraživanja o nivou oralnog zdravlja se rijetko ili se uopšte ne sprovede.¹⁶

Iskustva iz Slovenije ali i drugih zapadnoevropskih zemalja jasno ukazuju da škole obezbjeđuju značajne platforme za kontrolu oralnog zdravlja kod djece i relevantni su pokazatelji promocije oralnog zdravlja.⁵ Revitalizacija školskih stomatoloških servisa je važna ne samo što oni mogu obezbjeđiti kurativnu njegu, već i što mogu biti instrument u razvoju okruženja za promociju zdravlja, zdravstveno prosvjeđivanje, sprovođenje preventivnih programa kao i razvoj pozitivnih navika u vezi sa oralnim zdravljem i zdravljem uopšte. Unaprijeđenje oralnog zdravlja i zdravlja zuba se može postići samo ako se programi promocije oralnog zdravlja i prevencije bolesti implementiraju na nivou zajednice, regiona ili države.

Ova studija potvrđuje da u daljim istraživanjima stanja oralnog zdravlja ne samo ovog regiona već i šire, treba da se utvrdi postojeće stanje, prisutna oralna patologija i da se pronađu modusi za rješavanje problema u oralnom zdravlju, stavljajući akcenat na organizovanje sistema primarne zdravstvene zaštite i na uvođenje mjera koje će dati najoptimalnije rezultate u predstojećem periodu.

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problems of this country and its dental healthcare system, it is necessary that the system adapts to specific community conditions, with respect to economic capabilities, current level of dental practice, available resources, as well as the present oral pathology. Systematic data is necessary in planning and organizing oral healthcare. However, epidemiologic tradition is relatively poor in most Central and Eastern European countries with seldom systemic national and regional research on dental health or even without it.¹⁶

Slovenian and other countries' experience clearly indicates that schools present important platforms for dental health control in children being relevant indicators of oral health promotion.⁵ School dental service revitalization is important not only because it can provide curative care but as being an instrument of developing an environment for health promotion, health education, preventive measures implementation and encouraging positive habits regarding oral health and health in general. It is possible to improve oral and dental health only if preventive programs are implemented on community, regional or national levels.

This study confirms that further investigation on oral health in this region and wider should determine the present state and oral pathology and suggest modalities for problem solving, with particular accent on organizing primary healthcare system and the implementation of measures for most optimal results in the forthcoming period.

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