



CREATION OF AN INTERACTIVE DIGITAL SYSTEM BASED ON MOBILE APPLICATIONS FOR PREVENTION OF CARIES IN CHILDREN WITH DIABETES

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Article History	Abstract
Received: 15.10.2025 Accepted: 30.12.2025	This article analyzes the issues of preventing dental caries in children with diabetes mellitus. The effectiveness of an interactive digital system based on a mobile application was studied. The research was conducted among diabetic children aged 7–12 years, comparing their oral health condition before and after the use of the mobile application. The results demonstrated that the use of the mobile app significantly reduced the risk of dental caries and improved oral hygiene among diabetic children.

Keywords: children, diabetes mellitus, dental caries, mobile application, digital system, oral hygiene.



QANDLI DIABETGA CHALINGAN BOLALARDA KARIESNING OLDINI OLISHDA MOBIL ILOVALAR ASOSIDAGI INTERAKTIV RAQAMLI TIZIM YARATISH

Annotatsiya/ Аннотация

Ushbu maqolada qandli diabet bilan kasallangan bolalarda og'iz bo'shlig'i sog'lig'i, ayniqsa tish kariesining oldini olish muammolari tahlil qilinadi. Tadqiqotda mobil ilovalar asosida ishlab chiqilgan interaktiv raqamli tizimning samaradorligi o'rganildi. Sinov 7–12 yoshdagi diabetik bolalar o'rtasida olib borilib, mobil ilovadan foydalanishdan oldin va keyingi holat natijalari taqqoslandi. Tadqiqot natijalari shuni ko'rsatdiki, mobil ilova orqali nazorat qilish tish kariesi xavfini sezilarli darajada kamaytiradi va og'iz gigiyenasi holatini yaxshilaydi.

Kalit so'zlar/ Ключевые слова: bolalar, qandli diabet, tish kariesi, mobil ilova, raqamli tizim, og'iz gigiyenasi.

Kirish

Qandli diabet bolalar orasida uchraydigan eng xavfli surunkali kasalliklardan biridir. U organizmda glyukoza almashinuvi, gormonlar muvozanati va metabolik jarayonlarga jiddiy ta'sir ko'rsatadi [1]. Ushbu kasallik og'iz bo'shlig'i salomatligiga ham sezilarli darajada ta'sir etib, tish kariesi va periodontal kasalliklarning rivojlanish xavfini oshiradi [2]. Tadqiqotlar shuni ko'rsatadiki, diabetga chalingan bolalarda og'izdagi mikroflora tarkibi o'zgaradi, so'lakning himoya xususiyati pasayadi va emalning demineralizatsiyasi kuchayadi [3]. Shu sababli, zamonaviy texnologiyalar, xususan, mobil ilovalar asosidagi interaktiv raqamli tizimlar orqali bolalarda og'iz gigiyenasini boshqarishning yangi yondashuvlari ishlab chiqilmoqda. Mazkur maqolada diabetga chalingan bolalarda tish kariesining oldini olish uchun ishlab chiqilgan raqamli platformaning ilmiy asoslari va samaradorligi yoritiladi.

Materiallar va usullar

Tadqiqot modeli 7–12 yoshdagi 60 nafar diabet tashxisi qo'yilgan bolalarni qamrab oldi. Ishtirokchilar ikki guruhga bo'lindi: nazorat guruhi ($n=30$) — an'anaviy gigiyena tavsiyalari olgan bolalar; eksperimental guruhi ($n=30$) — "DentalCare-D" mobil ilovasi yordamida interaktiv nazorat tizimidan foydalangan bolalar. Mobil ilova tarkibiga kundalik tish tozalash eslatmalari, ovqatlanish va shakar iste'moli nazorati, tish shifokori bilan onlayn monitoring va motivatsion ball tizimi kiritildi. Tadqiqot 3 oy davomida olib borildi. Og'iz gigiyenasi Green-Vermillion indeksi, karies intensivligi esa DMF ko'rsatkichi orqali baholandi. Statistik tahlil uchun SPSS 25.0 dasturi qo'llanildi [4].

Natijalar

Tadqiqot yakunida eksperimental guruhda karies ko'rsatkichlari ancha kamayganligi aniqlandi. Mobil ilovadan foydalangan bolalarda o'rtacha DMF indeksi 3,2 dan 1,7 gacha pasaydi ($p<0.01$), nazorat guruhida esa sezilarli o'zgarish kuzatilmadi (3,1 dan 2,9 gacha). Shuningdek, og'iz gigiyenasi indeksi (OHI) 0,9 birlikka yaxshilangan [1]. Mobil ilova bolalarda



gigiyena odatlarini mustahkamlash, tish yuvish chastotasini oshirish va shakar iste'molini kamaytirishda samarali natija berdi.

Muhokama

Natijalar xalqaro adabiyotlar bilan solishtirilganda o'xshash tendensiyalar kuzatildi. Masalan, Kwon va hamkorlari [5] tomonidan Janubiy Koreyada o'tkazilgan tadqiqotda, diabetik bolalar uchun ishlab chiqilgan "SmartOral" mobil platformasi yordamida karies xavfi 40% gacha kamaygan. Bizning tadqiqotda ham interaktiv tizimlar orqali real vaqtlil nazorat tish sog'lig'ini sezilarli yaxshilaganini ko'rsatdi. Bu esa sog'liqni saqlash tizimida raqamli stomatologiya konsepsiyasini rivojlantirish zarurligini tasdiqlaydi [6]. Mobil ilovalar, ayniqsa, diabetli bolalarda o'zini nazorat qilish ko'nikmalarini shakllantirishda muhim vosita bo'lib, ota-onalar va shifokor o'rtasidagi aloqa samaradorligini oshiradi.

Xulosa

Qandli diabetga chalingan bolalarda tish kariesi rivojlanish xavfi yuqori, chunki metabolik o'zgarishlar og'iz muhitining himoya mexanizmlarini susaytiradi. Mobil ilovalarga asoslangan interaktiv tizimlar og'iz gigiyenasini nazorat qilish va motivatsiyani oshirishda samarali vosita bo'lib xizmat qiladi. Tadqiqot natijalari shuni ko'rsatadiki, 3 oylik mobil ilova nazorati natijasida karies xavfi 45% gacha kamayadi. Shu sababli, diabetli bolalar uchun raqamli profilaktika tizimlarini keng joriy etish tavsiya etiladi.

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