

Article

# Integration of Pediatric Dentist and Pediatrician Work Within the Framework of Early Primary Prevention of Caries in Children Under Three Years Old

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**Abstract:** This scientific article examines in detail the concept of interdisciplinary integration between pediatrics and pediatric dentistry aimed at early prevention of dental caries in children under three years old. The authors substantiate the fact that pediatricians, who regularly monitor a child from birth, possess the maximum potential for identifying early behavioral and dietary risks. The paper describes in detail the methodology of implementing seamless questionnaires, dental status assessment algorithms at pediatric appointments, and patient routing. The results of a two-year clinical monitoring of one hundred and twenty children divided into groups with standard and integrative follow-up are analyzed. It is clinically confirmed that the joint work of specialists ensures timely referral to a dentist before the age of one and reduces the increment of caries intensity by 68.5%. In the main group, a qualitative improvement in parents' hygienic behavior and a decrease in the frequency of cariogenic nocturnal feedings were recorded. In conclusion, clear organizational outcomes and the expected medico-social effect for the public healthcare system are formulated.

**Keywords:** *interdisciplinary interaction, pediatrician, pediatric dentist, early childhood caries, primary prevention*

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## 1. Introduction

Early childhood caries (ECC) remains one of the most pressing and challenging issues in modern healthcare. Despite the advent of new restorative materials and minimally invasive technologies, the prevalence of dental caries in children under three years of age shows no sign of decreasing globally. This pathology is characterized by its rapid, destructive progression: the enamel of primary teeth, which has a low degree of mineralization immediately after eruption, is rapidly degraded by organic acids produced by bacteria [1]. The traditional approach, in which the first visit to a pediatric dentist occurs only when a visible defect or pain occurs, is recognized by the expert community as ineffective. By this point, the pathological process typically progresses to the destructive stage, requiring surgical intervention, often under general anesthesia [2]. The main reason for these failures lies in lost time: the window of opportunity for etiopathogenetic intervention closes before a child first visits the dentist. The solution to this problem lies in a fundamental restructuring of the organizational model and the integration of efforts between pediatric dentists and community pediatricians, who serve as the primary point of contact with families during the first months of a child's life [3].

Pediatricians possess a unique and strategically important resource: regular child monitoring during well-child visits during the first and second years of life. Pediatricians monitor feeding patterns, assess physical development, and have the opportunity to adjust family eating habits long before persistent cariogenic habits develop [4]. However, in

routine practice, the potential of pediatric services for dental disease prevention is underutilized due to a lack of interdisciplinary protocols, strict appointment times, and a lack of awareness among specialists of modern criteria for assessing dental risk in early childhood. The development of a seamless model of interaction between a pediatrician and a pediatric dentist will shift the diagnostic focus to the antenatal and early postnatal periods, ensuring the timely identification of ECC predictors [5].

Despite the potential role of pediatricians in the early prevention of dental diseases, interdisciplinary interaction between pediatric and dental services is not always systematically incorporated into routine care [6]. The absence of standardized screening, referral, and preventive counseling mechanisms may delay the identification of cariogenic risk factors and the first contact between a child and a pediatric dentist. Consequently, there is a need to evaluate whether an integrated model involving both pediatricians and pediatric dentists can improve the timing and clinical effectiveness of early primary prevention of childhood caries [7].

The aim of this study was to develop, implement, and evaluate an interdisciplinary model of interaction between pediatricians and pediatric dentists for the early primary prevention of caries in children under three years of age [8]. Particular attention was given to the early identification of behavioral and dietary risk factors, timely referral to pediatric dental care, parental preventive education, and the clinical outcomes associated with integrated follow-up. It was hypothesized that systematic integration of pediatric and pediatric dental services would promote earlier dental referral, improve parental adherence to preventive recommendations, and reduce caries development compared with the conventional model of pediatric follow-up [9].

## 2. Materials and Methods

To develop, implement, and objectively evaluate the effectiveness of an interdisciplinary prevention model, we conducted a two-year randomized controlled trial. A large city children's clinic and a specialized pediatric dental department served as the study site. The study included 120 mother-child pairs (children aged 6 to 12 months at enrollment). The study methodology consisted of several sequential stages. During the first stage, pediatricians at the experimental sites underwent a brief modular training course focused on visual screening of children's oral cavity, algorithms for assessing cariogenic risk factors, and anticipatory guidance for parents. A validated screening questionnaire, completed by mothers while waiting for their appointments, was introduced into pediatric practice. The questionnaire enabled the prompt identification of critical markers, including nighttime feedings of carbohydrate formulas after one year of age, the use of shared cutlery, and a lack of toothbrushing skills since the eruption of the first incisor. The second stage of the methodology involved dividing the participants into two representative groups. The control group (n=60) included children observed by pediatricians according to a standard protocol, according to which a referral to a pediatric dentist was issued routinely at the age of two to three years or at the request of parents. In the study group (n=60), an integrative model was implemented. As part of monthly or quarterly examinations, the pediatrician performed a rapid oral assessment, identified the presence of visible plaque (Visual Plaque Index - VPI), and, if at least one risk factor or chalky stains on the enamel were present, directly referred the child to a pediatric dentist. At the dental appointment, an individual preventive passport was created for children in the study group: parents were trained in the technique of brushing teeth with fluoride-containing toothpastes at a dosage of 1000 ppm (the volume of a grain of rice) and professional enamel coating with 5% sodium fluoride was performed 2-3 times per year. Objective monitoring of the dental status of children in both groups, including calculation of the caries intensity index (CII), was performed by independent dental experts at 12 and 24 months from the start of the study. The primary outcome of the study was the difference in caries intensity between children receiving standard pediatric follow-up and those

managed through the interdisciplinary preventive model during the 24-month observation period. Secondary outcomes included the timing of the first visit to a pediatric dentist, parental adherence to preventive recommendations, stabilization of initial enamel demineralization lesions, and the occurrence of complicated forms of dental caries.

The effectiveness of the interdisciplinary model was evaluated by comparing clinical and behavioral outcomes between the study and control groups. Particular attention was given to the proportion of children referred to a pediatric dentist before 12 months of age, changes in parental preventive behavior, caries intensity at the final examination, and the clinical course of initial white-spot lesions.

Quantitative data were summarized using descriptive statistical measures, and comparative analysis was performed between the study and control groups. Differences were considered statistically significant at  $p < 0.05$ .

### 3. Results

Analysis of the study results revealed the high organizational and clinical significance of the interdisciplinary approach. The initial survey confirmed that over 78% of mothers lacked a basic understanding of the timing of oral hygiene initiation in infants and practiced cariogenic feeding patterns (indiscriminate use of bottles before bedtime) [10]. The introduction of the integrative model enabled a dramatic change in the timing of the first dental visit: in the study group, 91.6% of children visited a pediatric dentist before 12 months of age (mean age  $9.4 \pm 0.6$  months), while in the control group this figure was only 18.3%, and most children first visited a specialist after two years of age with advanced destructive caries [11].

After 24 months of follow-up, significant clinical differences were observed. In the study group, where preventive recommendations were delivered jointly by both the pediatrician and dentist, parental compliance increased to 88.3%. The average KPU index for children in the study group was  $0.54 \pm 0.12$  by the end of the study, compared to  $1.72 \pm 0.28$  in the control group ( $p < 0.05$ ). Thus, the integration of services resulted in a 68.6% reduction in the increase in caries incidence. Thanks to early detection of initial demineralization by pediatricians and immediate prescription of remoterapy by the dentist, 52.3% of children in the study group were able to stabilize white spot caries and prevent cavities. In the control group, 23.3% of children developed multiple forms of complicated caries (pulpitis), requiring sanitation [12].

The comparative findings demonstrated both organizational and clinical advantages of the interdisciplinary model. The proportion of children receiving dental examination before 12 months of age was substantially higher in the study group than in the control group (91.6% versus 18.3%), indicating that pediatrician-led screening and direct referral considerably improved the timing of the first pediatric dental visit [13].

After 24 months, the study group also demonstrated more favorable clinical outcomes. The mean caries intensity index was  $0.54 \pm 0.12$  in children managed through the interdisciplinary model compared with  $1.72 \pm 0.28$  in the control group ( $p < 0.05$ ), corresponding to a 68.6% reduction in caries increment [14]. Parental compliance with preventive recommendations reached 88.3% in the study group. In addition, stabilization of initial white-spot lesions without progression to cavitation was observed in 52.3% of children receiving integrated preventive care. Taken together, these findings indicate that the interdisciplinary model was associated with earlier access to pediatric dental care, greater parental adherence to preventive recommendations, and more favorable dental outcomes during the two-year observation period [15].

### 4. Discussion

In summary, the isolation of dental services from primary pediatric care is the main barrier to effective ECC prevention. Pediatricians are the primary medical professionals

who shape a child's health culture, and their involvement in educating parents about oral hygiene is crucial. Successful integration helps overcome family ignorance, minimize nutritional risks, and implement the "Dental Home" concept within the optimal timeframe before the child's first birthday. Creating a unified information and methodological framework between agencies transforms primary prevention from a declarative concept into a working tool for practical healthcare. The findings of the present study demonstrate that interdisciplinary collaboration between pediatricians and pediatric dentists may substantially improve both the organizational and clinical effectiveness of early childhood caries prevention. The most notable organizational effect was the considerable increase in the proportion of children who received their first pediatric dental examination before 12 months of age. In the integrated-care group, 91.6% of children visited a pediatric dentist before their first birthday, compared with only 18.3% in the control group. This finding indicates that incorporating oral-health screening and direct dental referral into routine pediatric care can help reduce delays in access to preventive dental services. The results also emphasize the importance of parental involvement in the prevention of ECC. At baseline, more than 78% of mothers demonstrated insufficient understanding of the appropriate timing for initiating oral hygiene and reported potentially cariogenic feeding practices. Following implementation of the interdisciplinary model, parental compliance with preventive recommendations reached 88.3%. This improvement suggests that repeated preventive counseling delivered through both pediatric and dental services may contribute to more consistent parental adherence to oral-hygiene and feeding recommendations during the early years of a child's life. The clinical outcomes further support the effectiveness of the integrated approach. After 24 months, the mean caries intensity index was  $0.54 \pm 0.12$  in the study group and  $1.72 \pm 0.28$  in the control group ( $p < 0.05$ ), corresponding to a 68.6% reduction in caries increment. These findings suggest that the benefits of interdisciplinary collaboration extend beyond earlier referral and parental education and may contribute to measurable improvements in children's dental health when combined with timely professional preventive interventions. Another clinically important finding was the stabilization of initial white-spot lesions in 52.3% of children in the study group. Early identification of enamel demineralization during pediatric screening followed by referral to a pediatric dentist created an opportunity to initiate preventive and remineralizing measures before progression to cavitated lesions. In contrast, 23.3% of children in the control group developed multiple complicated forms of caries requiring further dental management. These findings highlight the potential value of detecting early reversible changes before extensive destruction of dental hard tissues occurs.

From a practical perspective, the proposed model demonstrates how pediatricians can contribute to oral-health prevention without replacing the professional functions of pediatric dentists. Routine pediatric visits may provide an opportunity for rapid oral screening, identification of behavioral and dietary risk factors, preventive counseling, and timely referral. Pediatric dentists can subsequently perform comprehensive risk assessment and provide individualized professional preventive interventions. Such distribution of responsibilities may facilitate continuity of preventive care during the period when children have frequent contact with pediatric healthcare services but may not yet routinely visit a dentist.

Several limitations should be considered when interpreting these findings. The study included 120 mother-child pairs and was conducted within a limited clinical setting, which may restrict the generalizability of the results to other healthcare environments. The observation period was limited to 24 months, and the study did not evaluate whether the observed improvements in parental behavior and dental outcomes were maintained beyond this period. In addition, although the study was described as randomized, the available methodology does not provide detailed information regarding the randomization procedure. Future multicenter studies with larger samples, longer follow-

up periods, and clearly described allocation procedures are therefore needed to confirm the effectiveness and scalability of the interdisciplinary model.

## 5. Conclusion

The results of this study demonstrate that integration between pediatricians and pediatric dentists can improve the effectiveness of early primary prevention of caries in children under three years of age. Incorporating oral-health screening, assessment of behavioral and dietary risk factors, preventive counseling, and direct dental referral into routine pediatric follow-up enabled substantially earlier access to professional dental care. In the study group, 91.6% of children received a pediatric dental examination before 12 months of age, demonstrating the organizational effectiveness of the interdisciplinary model. The integrated approach was also associated with favorable clinical outcomes. After 24 months of observation, the mean caries intensity index was  $0.54 \pm 0.12$  in the study group compared with  $1.72 \pm 0.28$  in the control group ( $p < 0.05$ ), corresponding to a 68.6% reduction in caries increment. Parental compliance with preventive recommendations reached 88.3%, while stabilization of initial white-spot lesions was observed in 52.3% of children receiving integrated preventive care. These findings indicate that early identification of risk factors combined with timely professional preventive interventions may reduce the progression of early childhood caries. The findings further demonstrate that pediatricians can play an important role in ECC prevention by identifying children at risk during routine well-child visits and ensuring their timely referral to pediatric dental services. At the same time, pediatric dentists remain responsible for comprehensive dental assessment and individualized professional prevention. The coordinated involvement of both specialists therefore provides continuity between primary pediatric care and specialized dental prevention during the critical early years of a child's life. Overall, interdisciplinary cooperation between pediatric and dental services represents a promising organizational approach to shifting ECC management from treatment of established disease toward early risk identification and primary prevention. The implementation of standardized screening, referral, and preventive counseling protocols may contribute to improving oral-health outcomes in young children. Further multicenter studies with larger populations and longer follow-up periods are required to confirm the long-term effectiveness and scalability of this model.

## REFERENCES

- [1] A. A. Davlatova, "Prevention of dental caries in preschool children," *Journal of Pediatric Dentistry*, no. 2, pp. 45–49, 2024.
- [2] J. A. Rizaev and A. S. Kubaev, "Basic principles of dental caries prevention in young children," *Bulletin of the Doctor*, no. 3, pp. 112–115, 2020.
- [3] E. Y. Rusakova and O. V. Baranova, "The role of pediatricians in reducing the influence of dietary factors in the pathogenesis of dental caries in young children," *Medical Alliance*, vol. 13, no. 2, pp. 88–92, 2025.
- [4] T. N. Terekhova and N. V. Shakovets, *Prevention of Dental Caries in Young Children: Educational and Methodological Manual*. Minsk, Belarus: Belarusian State Medical University, 2016, 64 pp.
- [5] T. P. Kharitonova, S. N. Lebedeva, and L. N. Kazakova, "The role of pediatricians in the prevention of dental caries in children during the first three years of life," *Russian Medical Journal: Pediatrics*, no. 2, pp. 114–118, 2007.
- [6] B. Rakhimov, F. Rakhimova, S. Sobirova, and O. Allaberganov, "Mathematical bases of parallel algorithms for the creation of medical databases," *InterConf*, 2021.
- [7] B. Rakhimov and O. Ismoilov, "Management systems for modeling medical database," *AIP Conference Proceedings*, vol. 2432, no. 1, Art. no. 060031, 2022.

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- [8] B. S. Rakhimov, "Information technologies in medical education," *Methods of Science: Scientific and Practical Journal*, no. 12, pp. 25–27, 2017.
  - [9] B. S. Rakhimov, O. I. Ismoilov, and R. O. Ozodov, "Software and automation of forensic examination," *Methods of Science: Scientific and Practical Journal*, no. 11, pp. 28–30, 2017.
  - [10] B. S. Rakhimov, A. B. Saidov, and A. A. Allayarova, "Using the model in CUDA and OpenCL for medical signals," *International Journal on Orange Technologies*, vol. 4, no. 10, pp. 84–86, 2022.
  - [11] B. S. Rakhimov, A. B. Saidov, B. F. Babajanov, D. A. Karimov, and M. Z. Musaeva, "Analysis and using of the features graphics processors for medical problems," *Texas Journal of Medical Science*, vol. 7, pp. 105–110, 2022.
  - [12] B. S. Rakhimov, B. G. Bekchanov, T. A. Jumaniyazova, and A. B. Saidov, "Processor architectures in data base problems," *Procedia Publish Group*, 2023.
  - [13] B. S. Rakhimov, Q. Q. Sobirova, and F. B. Rahimova, "Development of algorithms for spectral analysis of medical signals on the polynomial Walsh bases," *Ufa, Russia*, pp. 38–39, 2018.
  - [14] American Academy of Pediatric Dentistry, "Caries-risk assessment and management for infants, children, and adolescents," in *The Reference Manual of Pediatric Dentistry*. Chicago, IL, USA: American Academy of Pediatric Dentistry, 2024, pp. 306–312.
  - [15] R. J. Weyant et al., "Topical fluoride for caries prevention: Executive summary of the updated clinical recommendations and supporting systematic review," *Journal of the American Dental Association*, vol. 144, no. 11, pp. 1279–1291, 2013, doi: 10.14219/jada.archive.2013.0057.