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REGULAR ARTICLE

ACTA PÆDIATRICA NURTURING THE CHILD WILEY

Impact of an extended postnatal home visiting programme on oral health among children in a disadvantaged area of Stockholm, Sweden

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Abstract

Aim: To evaluate oral health outcomes and early oral health promotion of children in a Swedish, parental support programme conducted in a collaboration between Child Health Services and Social Services.

Methods: The intervention offered first-time parents six home visits from a paediatric nurse and a parental advisor with Social Services. On the fourth visit (infant age 6-8 months), parents received a toothbrush and fluoride toothpaste from non-dental staff. Twice, at child ages 18 and 36 months, a dentist used the International Caries Detection and Assessment System to record caries and conducted a structured interview with the parents on oral health habits. The intervention group (n = 72) was compared to a reference group (n = 100) from the standard child healthcare programme, which included one home visit.

Results: Significantly, caries prevalence was lower and tooth brushing habits more consistent in the intervention group compared to the reference group in the standard child health programme. The difference was most pronounced at 18 months and had decreased at the 36-month follow-up.

Conclusion: The extended postnatal home visiting programme had a positive impact on oral health. Early oral health promotion delivered by non-dental professionals could be a beneficial approach to early caries prevention.

KEYWORDS

child health care, early childhood caries, health inequality, parental support programmes, prevention

Abbreviations: ECC, early childhood caries; ds, decayed surfaces; dfs, decayed filled surfaces; ICDAS, International Caries Detection and Assessment System; SD, standard deviation; WHO, World Health Organization.

1 | INTRODUCTION

Young children in socially and economically disadvantaged households have unfavourable outcomes on several health indicators, including dental caries.[1,2] Dental caries is one of the most common chronic diseases during childhood.[3] Often referred to as Early Childhood Caries (ECC),[4] dental caries in young children can affect their quality of life negatively, causing pain, infection, failure to thrive and delayed development.[5] Dental caries early in life increase the risk of further rapid caries development in the primary dentition,[6] as well as dental caries later in the permanent dentition.[7]

Several social and behavioural risk factors are associated with ECC. They include parental poverty and low health literacy, mother with active dental caries and children with chronic health conditions. Frequent consumption of sweets and sugar-containing beverages, consumption of drinks with natural or added sugar in a bottle at bedtime and nocturnal feeding beyond 12 months are behaviours associated with caries development. The clinical risk factors that are particularly important in preschool children include not only existing cavities but also non-cavitated lesions, enamel defects and visible plaque. Tooth brushing twice daily with fluoride toothpaste and regular dental care are major protective factors.[4]

One of the disparities in oral health is the clear socio-economic gradient in disease development.[8] Where children in disadvantaged groups are affected to a greater extent.[9] Over the last decades, Sweden has had well-established caries preventive programmes for improving paediatric oral health. Still, some groups continue to be at high risk of developing extensive dental caries.[10,11] The review of the 2018 International Association of Paediatric Dentistry Global Summit on Early Childhood Caries[4] concluded that preventive programmes targeting low socio-economic communities at high risk of oral health problems typically applied traditional caries preventive methods. The review also stated that culturally aligned interventions with community-based participation were successful ways of reducing ECC.[4] International studies also suggest that including home visits or regular telephone support in education programmes is an effective way of increasing parental health literacy and self-efficacy and, thereby, preventing ECC.[12,13]

Collaboration with other non-dental professionals to support oral health messages may add new pathways for preventing ECC.[14] Swedish Child Health Services are free of charge and reach 99.5% of all enrolled children aged 0-5 years. The mandate of the Services is to promote health and prevent illness and health inequalities among children.[1] ECC prevention requires early intervention,[4] and parental attitudes and beliefs play a central role in forming oral health behaviours in the caries development of children.[15] Delivering child health care and oral health information at an early age may be a way of reaching children at high risk for developing ECC and reducing oral health disparities. The aim of the present study was to evaluate the oral health outcomes of early oral health promotion in a new Swedish, parental support programme that was conducted in collaboration between Child Health Services and Social Services.

Key notes

- This study assessed the impact on oral health at 18 and 36 months of an extended postnatal home visiting programme.
- The proportion of children with cavitated caries lesions at 18 months was significantly lower in the intervention group but this difference did not remain significant at the 36-month follow-up.
- Coordinated professional efforts between paediatric dentistry and child health care are needed to further identify pathways for reducing oral health disparities.

2 | PATIENTS AND METHODS

The present study examines the oral health of children participating in the Rinkeby extended home visiting programme, an interventional cohort study. The postnatal extended home visiting programme is a collaboration between the Child Health Care Centre and Social Services in Rinkeby, a disadvantaged area in Stockholm, Sweden. The purpose of the programme is to reduce inequalities in the conditions for child health and development among Swedish children.[16]

2.1 | Setting and participants

In the intervention area, Rinkeby in Stockholm municipality, about 90% of the residents have a foreign background.[17] In 2013, when the intervention was initiated, unemployment exceeded 50%, and 42% of the children were living in relative poverty compared to the city average of 12%.[18] The children had less favourable health indicators that include early exposure to tobacco smoke, lower vaccination coverage, child obesity and dental caries.[1] During the inclusion period of 1 September 2013 to 31 December 2014, 119 children of first-time parents were enrolled at the Rinkeby Child Care Center. Of these, 94% consented to participate in the extended home visiting programme.[16] The study protocol of Burstrom et al describes the participating families, and most had been born outside of Sweden or had recently arrived. They reported large unmet basic needs concerning housing, income and social contacts. There was high mobility among the families due to moving, within the region and abroad.[16]

2.2 | The Rinkeby extended home visiting programme

In Sweden, the standard child healthcare programme offered by Child Health Services includes one home visit by a child health nurse around 2 weeks after birth. The standard program also includes regular planned clinical contacts with all children and their parents until 6 years of age. For 1 year, the local Child Healthcare Centre

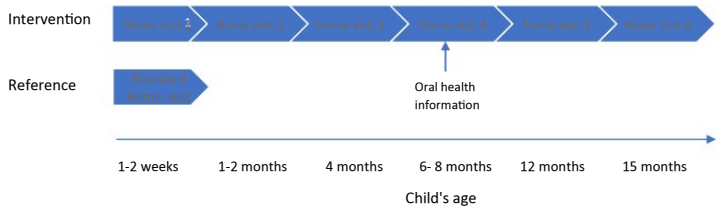

FIGURE 1 The extended home visiting programme. In addition to the standard child health program in Sweden, the extended postnatal home visiting programme in Rinkeby included six home visits during the child's first 15 mo[19]

in Rinkeby offered all enrolled first-born children and their parents an extended version of the standard programme that included five extra home visits between ages 2 and 15 months by a Child Health Care nurse and a parental advisor from Social Services. Working together, the professionals provided both health care and psychosocial support. Each home visit targeted different themes related to child health and development. To stimulate tooth brushing with fluoride toothpaste, they provided parents with a free toothbrush and fluoride toothpaste (1000 ppm) from the local Public Dental Service at infant's age around 6-8 months, at home visit 4 (Figure 1). The toothbrush was accompanied by an oral recommendation to start brushing when the first tooth erupted. The programme also contained general information on healthy feeding practices and sugar-containing products, consistent with dietary advice for caries prevention in young children.[19] To avoid stigmatisation, the extended support programme was offered to all first-time parents in the area and not a randomised selection of children. Burstrom et al describe the study protocol for the full intervention,[16] (International Standard Randomised Controlled Trial Number ISRCTN11832097). A comprehensive manual for the extended home visiting programme, created by the Child Health nurses and parental advisors, is available in Swedish.[19] Dentists did not take part of the initial planning of the project, but where invited in the final phase of the project to also include oral health as an outcome. The Regional Ethics Review Board in Stockholm approved the main study (registration number 2013/877-31) and additionally approved evaluation of the oral health of participating children (registration number 2015/854-32). All parents signed informed consent forms.

2.3 | Recruitment to dental examination

The Swedish Child Health Services offers all children aged 18 months a planned clinic visit for vaccination purposes. In the present study, at this visit, the child health nurse asked parents in the extended support programme if they would meet with the dentist.

When possible, the dentist examined the child at the Child Health Care Centre during the visit. Otherwise, the paediatric nurse made an appointment for the child at a later date, with the dentist at the Centre. When the parent and child arrived for their appointment, the dentist obtained written consent for the dental examination and oral health evaluation from the parents. As a reference group, children who were enrolled at a neighbouring Public Dental Service clinic in a similar socio-economic area (Tensta) and who were similar in age were offered participation in the present study. The children were receiving only the standard child health care programme, with a single home visit, and their parents signed informed consent forms when they arrived at the dental clinic. Not all the 18-month-old children who were recruited for the reference group were first-born children since this information was not available prior to the dental appointment. The examining dentist asked the parents for this information at the 18-month visit. The intervention group and the reference group had similar access to dental care and the regional caries preventive programme.

For both groups, the consent form included consent for the follow-up visit at the local dental clinic when the children were 36 months of age.

2.4 | Data collection

2.4.1 | Clinical examination

A paediatric dentist examined the children at 18 and 36 months. At 18 months, the dentist examined the children in a knee-to-knee position (Figure 2) at the child health service (intervention group) or the local dental clinic (reference group). At the 36-month visit, the dentist examined all children in the dental chair at their local dental clinic.

Dental caries was registered using the International Caries Detection and Assessment System (ICDAS) criteria[20] grading each tooth surface from zero to six. A sound tooth surface was coded as

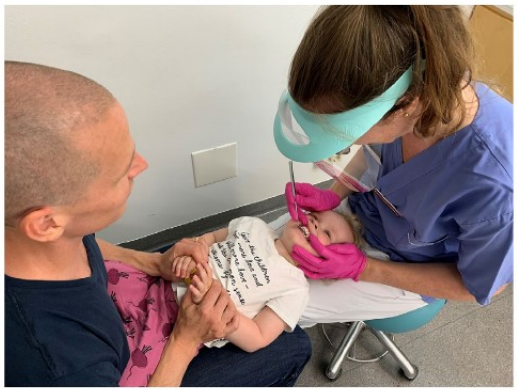

FIGURE 2 Knee-to-knee dental examination of toddler

zero. Non-cavitated lesions were coded as one at first visual change in enamel, and two at distinct visual change in enamel when wet. Cavitated lesions were coded as three when there was localised enamel breakdown, without clinical visual signs of dentin involvement, and four when underlying dark shadow in dentin was visible. A distinct cavity with visible dentin was coded as five, and an extensive distinct cavity with visible dentin as code six. If teeth were missing, due to caries, uneruption or other reasons, the cause was determined based on eruption pattern and anamnestic information from caregivers. Before the examination, the teeth were cleaned and dried with cotton rolls; a toothbrush without toothpaste was used to remove plaque when necessary. With a mouth mirror and ball-ended probe, the dentist determined plaque, gingivitis, white spot lesions and cavities. When dental lightning was not available, the dentist wore head-mounted lightning. After the examination, the dentist would watch parents brush their child's teeth and gave practical advice if necessary. The dentist also emphasised the importance of assisted brushing twice daily with fluoride toothpaste and gave dietary counselling focusing on reducing the frequency of sugar intake. All children also received a free toothbrush and a tube of toothpaste (1000 ppm) at 18 and 36 months of age. The same examination protocol was used in the intervention and reference groups. Interpreters were available for translation when needed.

2.4.2 | Questionnaire

At the dental examinations, the dentist interviewed the accompanying parents using a structured guide. Included items queried previous dental experience of the parent, and dental trauma, tooth brushing and dietary habits of the child. The examiner recorded parental experience of dental care in free text as none, only acute dental care or regular planned visits. Previous dental trauma of the child was recorded as yes or no. The frequency of tooth brushing morning and evening and use of fluoride toothpaste was expressed on a five-point scale as never, less than once a week, 2-3 times/wk, 4-6 times/wk and every day. The responses were analysed as no daily brushing, brushing once daily or brushing twice daily. Tooth brushing was only considered done when a parent assisted, and fluoride toothpaste was used. Dietary habits were described in terms of intake frequency >5 times a day, sweet snacks between meals, sugary drinks when thirsty, and nocturnal feeding/breastfeeding with the response options yes or no. The items on tooth brushing and dietary habits were modified from previous studies on dental caries and oral health behaviours in older children.[21,22]

2.4.3 | Outcomes

The primary oral health outcomes were the prevalence and progression of dental caries. To describe the prevalence of cavitation, we defined the threshold for cavitation as an ICDAS score of 3-6. Secondary outcomes were oral health behaviours such as tooth brushing habits, use of fluoride and dietary habits.

2.4.4 | Examiner training

The two examiners (IB and GT), both paediatric dentists, were calibrated for ICDAS, and written protocols ensured that the examinations were standardised. IB (first author), with previous training and calibration in ICDAS scoring, showing an intra- and inter-examiner reliability of $\kappa = 0.73$ (cut-off ICDAS 3-6),[10] was considered the senior examiner and conducted calibration exercises for the present study with the other examiner.

Training and calibration of the ICDAS criteria included a 90-minute e-learning programme (www.icdas.org), a 3-hour lecture, and discussions on the ICDAS codes and examination protocol. The lecture included 25 images of teeth or tooth surfaces with an ICDAS score between 0 and 6 for use as individual calibration exercises. Reliability was calculated after the examiners repeated this exercise 1 month later; all scorings of both examiners were reviewed to identify differences in interpretation. Intra-examiner reliability for all scorings from sound to cavitated (ICDAS 0-6) was Cohen's $\kappa = 0.95$ for examiner one and $\kappa = 0.76$ for examiner two. Inter-examiner reliability was $\kappa = 0.85$ at the first scoring and $\kappa = 0.86$ at the second. Intra-examiner reliability was also compared with a standard previously set by two experienced examiners,[10] and ranged between $\kappa = 0.81$-1.0 for ICDAS 0-6. Furthermore, the dentists examined 10 patients together at the 18-month visit to establish consensus. At all clinical examinations, photographs and descriptions of all ICDAS criteria appended the written protocol.

2.5 | Statistical analysis

Statistical analyses were conducted using STATA Statistical Software, release 14 (StataCorp LP) and IBM SPSS Statistics for Windows, version 25.0 (IBM Corp). The descriptive analysis comprised means, standard deviations, and absolute and relative frequencies. We used the chi-square test or Fisher's exact test to evaluate the difference between the proportions of characteristics of the participants, differences in caries progression at 18 months and at the follow-up, and between groups. For continuous variables, we used the Mann-Whitney *U* test to assess differences in mean number of decayed surfaces between groups and between 18 and 36 months. Using a linear mixed-effects model for repeated measures to calculate the ICDAS change between baseline and follow-up, estimated the effect of the intervention. The significance level was set at $P < 0.05$.

3 | RESULTS

3.1 | Final population and background characteristics

Of the 101 newborn infants in the Rinkeby extended home visiting programme, 73 children attended the dental examination at 18 months of age and 60 children the follow-up 18 months later. In

TABLE 1 Characteristics of the participants in the reference and intervention group at age 18 and 36 mo

	Age 18 mo			Age 36 mo		
	Reference (n = 100)	Intervention (n = 72)		Reference (n = 77)	Intervention (n = 57)	
	% (n)	% (n)	*P*	% (n)	% (n)	*P*
Gender						
Boy	53 (53)	60 (43)	0.381	51 (39)	60 (34)	0.301
Girl	47 (47)	40 (29)		49 (38)	40 (23)	
Previous dental trauma	17 (17)	19 (14)	0.681	13 (10)	26 (15)	0.050
Intake frequency >5 times/d	42 (42)	51 (37)	0.223	23 (18)	26 (15)	0.696
Sweet snacks between meals	17 (17)	33 (24)	**0.013**	22 (17)	23 (13)	0.920
Sweet drinks between meals	19 (19)	31 (22)	0.079	23 (18)	19 (11)	0.571
Nocturnal feeding bottle	46 (46)	38 (27)	0.266	25 (19)	12 (7)	0.073
Night-time breastfeeding	15 (15)	10 (7)	0.307	0 (0)	2 (1)	0.243
Tooth brushing once daily	66 (66)	86 (62)	**0.003**	90 (69)	93 (53)	0.499
Tooth brushing twice daily	47 (47)	63 (45)	**0.044**	61 (47)	79 (45)	**0.027**

Note: Based on the chi-square test, $P < 0.05$ is considered significant and marked in boldface.

the reference group, 100 children were recruited at 18 months of age and 77 of these could be followed up at age 36 months. Three patients in the intervention group were excluded from the final analysis because they had received three or fewer home visits and it was unknown if they had received a toothbrush and toothpaste, or when. Two of the excluded patients had missing dental examination data at age 18 months, resulting in 72 patients in the analyses of the intervention group at 18 months of age. Analyses of the oral health outcomes of first-born (40%) and later-born (60%) children in the reference group revealed no significant differences, so they were all included in the further analyses as comparators. Table 1 describes the characteristics of the participants at 18 months and 36 months of age.

Parents in the intervention group introduced tooth brushing twice daily significantly more often when their child was 18 months ($P = 0.044$) than parents in the reference group, and this difference persisted at follow-up ($P = 0.027$). The intervention group also snacked more often between meals at 18 months ($P = 0.013$). Between-group differences in other patient characteristics were non-significant at 18 months and at follow-up (Table 1). Parental experience of previous dental interactions was similar: 67% in both groups stated that they only sought dental care for acute problems and did not attend regular appointments (data not shown).

3.2 | Clinical variables and caries progression

The proportion of children with cavitated caries lesions (ICDAS 3-6) at 18 months was significantly lower in the intervention group ($P = 0.042$), but this difference did not remain significant at follow-up at 36 months ($P = 0.247$). However, when considering any sign of dental caries (ICDAS 1-6), the intervention group showed a significantly higher proportion of caries-free children, 68% compared to 51% in the reference group at follow-up ($P = 0.039$; Table 2).

No teeth were missing due to caries at either examination. Two children in each group had restorations at follow-up: four fillings on primary molars in the intervention group and three in the reference group. The maxillary incisors, particularly the buccal and mesial

TABLE 2 Prevalence of clinical variables

	Age 18 mo			Age 36 mo		
	Reference (n = 100)	Intervention (n = 72)		Reference (n = 77)	Intervention (n = 57)	
	% (n)	% (n)	*P*	% (n)	% (n)	*P*
Any sign of caries (ICDAS 1-6)	22 (22)	22 (16)	0.972	49 (38)	32 (18)	**0.039**
Cavitated caries (ICDAS 3-6)	7 (7)	0 (0)	**0.042**	26 (20)	18 (10)	0.247
Plaque (yes)	45 (45)	44 (32)	0.942	46 (35)	30 (17)	0.066
Gingivitis (yes)	12 (12)	11 (8)	0.858	8 (6)	5 (3)	0.563

Note: $P < 0.05$ is considered significant and marked in boldface.

TABLE 3 Caries development in the intervention group and the reference group

	Change in caries status at age 36 mo						
	Number of Children			Surfaces			
				New ds		Total dfs	
Caries status at age 18 mo	no new caries lesions*	new caries lesions*	restorations	$\bar{x}$	SD	$\bar{x}$	SD
Intervention group							
Children with caries* (n = 13)	3	8 (61.5%)	2	2.9**	2.6	7.0**	7.3
Caries-free children (n = 44)	36	8 (18.2%)	0	0.7	3.2	1.1	4.3
Total (n = 57)	39	16 (28.1%)	2	1.1	2.8	2.1	5.4
Reference group							
Children with caries* (n = 18)	1	16 (88.9%)	1	4.5**	5.4	9.8**	8.6
Caries-free children (n = 59)	38	20 (33.9%)	1	1.2	3.6	1.7	3.8
Total (n = 77)	39	36 (46.7%)	2	2.0	4.3	3.7	6.3

Abbreviations: dfs, all cavitated and filled surfaces; ds, new cavitated caries surfaces.

*Caries = ICDAS 1-6.

**Mann-Whitney *U* test ($P < 0.05$).

surfaces, were first to develop cavitated dental caries. The highest progression rates occurred on the occlusal surfaces of primary molars. Analysis of the distribution of cavitated lesions in all children with caries at 18 months of age found that 71% had lesions located only on the incisors; 14% only on the first primary molars; and 14% on both the first primary molar and incisors. The distribution was different at 36 months of age: 20% had cavitated lesions located only on the incisors; 33% only on the primary molars; and 43% on both the incisors and primary molars.

Comparisons of caries development in children who were caries free with those who exhibited any signs of caries at 18 months revealed that caries-free children in both groups had a significantly lower incidence of caries at 36 months ($P < 0.05$). No significant difference in caries progression occurred between the intervention group and the reference group (Table 3). Figure 3 shows caries development in caries-free children for each group, where 82% of the intervention group and 64% of the reference group remained caries free during the study ($P = 0.052$). Analysis of the effect of the intervention at child age 36 months found an increased mean ICDAS-score of 2.09 (±3.7) in the reference group and of 1.04 (±2.8) in the intervention group; however, this difference was not significant (β = 1.09; 95% CI 0.00-2.18; $P = 0.050$).

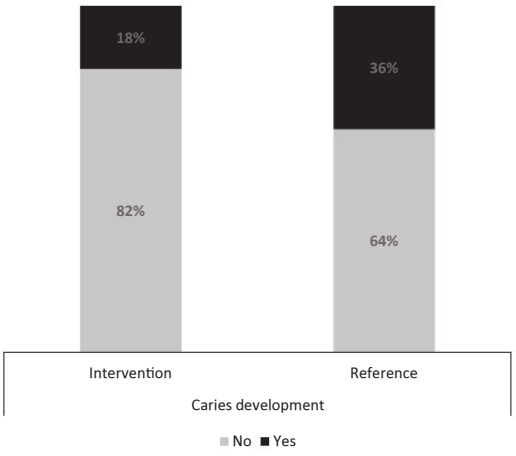

FIGURE 3 Caries development between 18 and 36 mo of age among children who were caries free at age 18 mo

4 | DISCUSSION

The present study found significant positive results concerning caries prevalence and tooth brushing habits in a group of children enrolled in an extended postnatal home visiting programme compared with a group of children in the standard child health programme offered in Sweden.

Daily tooth brushing starting at the time of tooth eruption is important since brushing with fluoride toothpaste is the caries preventive method with strongest scientific support.[23] Earlier studies on caries progression and ECC prevention emphasise the importance of early intervention to prevent establishment of caries and rapid disease development.[6,24] The present parental support programme distributed oral health information, toothbrushes and fluoride toothpaste when the infants were 6- to 8-months old, coinciding with eruption of the first teeth. The oral health evaluation showed that significantly more parents in the extended parental support programme than in the reference group had established tooth brushing routines when their children were 18 months old. Despite a higher prevalence of snacking at 18 months, the intervention group children had significantly fewer cavitated caries than the reference group. A possible explanation could be the early and regular fluoride exposure from tooth brushing.

The present study found a high prevalence of ECC, which agrees with previous findings in socio-economically vulnerable communities and among disadvantaged immigrants.[8,11] Children in the present study were only considered caries free when there was no sign of decay, cavitated or non-cavitated, in accordance with the current definition of ECC by the American Academy of Pediatric Dentistry.[4] Thus at 3 years of age, 68% of the children in the intervention group and 51% in the reference group were caries free. The prevalence of caries was in line with previous studies of ECC in similar areas.[6,11,24]

Intake of sweets has been shown to be a predictor of caries in children.[11] The frequent intake of sugary drinks and sweet snacks in both groups could explain our findings of caries development. The reference group also exhibited improved oral health behaviours at the follow-up, with 90% of the participants brushing their teeth at least once daily at follow-up. Participation in a clinical study, which includes receiving special attention from a dentist, could contribute to the development of positive oral health behaviours. The increase in daily tooth brushing in both groups between 18 and 36 months could be a reason for the less pronounced differences at follow-up.

The present study found a higher prevalence of cavitated caries than reported for 3-year-olds in high-risk areas in the 2016 report on oral health in Stockholm County, where Rinkeby is located.[25] This could be partly due to the use of ICDAS criteria, which is more exact than the WHO criteria, for determining type of caries lesion.[26] The material in the present study is also limited to a specific group of children in a high-risk community whereas the annual report from the Stockholm County Council contains aggregated data from several clinics in the area. However, a recent Swedish study that also used the ICDAS criteria study reported a lower prevalence of caries in children aged 12-36 months living in high-risk areas.[10]

Since past caries experience is the single best predictor of future caries,[27] an important goal is to keep children caries free. Our findings show that, for both groups, children with caries at 18 months had significantly more new caries lesions at follow-up than children who were caries free at the first examination. This agrees with Grindefjord et al.[6] who showed that 92% of children with caries at 2.5 years of age had more cavitation 1 year later. The same study showed that few young children received restorative treatment of manifest lesions, which is also true for the current cohort. Although over 75% of the children with cavitated lesions at 36 months presented cavities on primary molars, only four children (13%) had restorations at follow-up. This indicates a need to see high-risk children early and regularly before 3 years of age, both for prevention and adequate therapy. We found that the proportion of caries free children who developed caries between 18 and 36 months was almost twice as high in the reference group compared to the intervention group. This was not significant, however, possibly due to the small sample size.

The first 1000 days of life (the 9 months of pregnancy and the first 2 years of life) is highlighted as a window of opportunity for supporting child development and long-term health.[28] Previous research has shown that socio-economic and maternal health factors during pregnancy,[2] as well as maternal oral health knowledge,[29] are important determinants of oral health outcomes in early childhood. In our study, most parents stated that they had no previous experience of regular preventive dental care. Analysis of the study protocol also found large unmet basic needs in housing, income and social contacts.[16] Since good oral health in children begins at home, parental attitudes and knowledge play an important role in shaping the oral health of children.[4,15]

Postnatal home visiting programmes are an evidence-based way of supporting the development and well-being of the child and seem to be especially promising in socially high-risk families.[16,30] The nurses and parental advisors in the current intervention were non-dental professionals who promoted oral health as part of a general parental support programme. This is in line with current global recommendations on ECC where raising awareness with other health workers and providing preventive guidance during the first year of life, building on existing child health programmes, are considered key areas for reducing the burden of oral disease.[4]

Compared with the standard child healthcare programme, the home visits in the extended postnatal programme had a more pronounced positive effect on oral health behaviours at 18 months. This highlights the importance of early intervention to prevent ECC. One reason for the deteriorating effect at 3 years of age could be that the standard child healthcare programme from Child Health Services and the Public Dental Service in Sweden offers no appointments between ages 2 and 3 years, which reduces support to the family. This agrees with the Wennhall et al.[31] study on a caries preventive programme where the greatest impact in a high-risk group of children occurred during the first year when the intervention was most intense. This illustrates the need of continuous support to parents and children in disadvantaged areas who are at high risk of developing dental caries.

This study has several limitations, such as the lack of blinding and randomisation, which the design of the main study[16] did not allow. These shortcomings, and the between-group discrepancy where all children in the study group, but not in the reference group, were first-born, could introduce bias in the findings and limit the level of evidence. Birth order has recently been associated with caries development in young children.[32] Furthermore, the study sample was small, and several children were lost to follow-up due to the high mobility of the families. These limitations in the findings urge further research through randomised controlled trials to find causal links between the parental support programme and positive oral health outcomes. Despite lower caries prevalence in the intervention group, prevalence in both groups was still high, and future work must further address the risk factors for ECC since many of the children already had established caries disease at the age of 18 months.

5 | CONCLUSION

In conclusion, this study indicated that an extended postnatal parental support programme including early oral health promotion delivered by non-dental professionals could be a beneficial approach to early caries prevention. Coordinated professional efforts between paediatric dentistry and child health care are needed to further identify the best preventive strategies for correcting social inequalities in oral health.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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