Kidsfabriek: Oral health awareness and promotion of oral self-care during a learning and play event for children and parents in The Netherlands

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ABSTRACT

Objective: To determine the impact of a public play and learning approach on the promotion of oral health and oral self-care of children and their parents, or carers.

Methods: Questionnaires were distributed to 74 visiting parents and carers to the *Kidsfabriek* 2015 event, building on experience gained during the previous year's event in 2014. A year later during the *Kidsfabriek* event in 2016, 108 children agreed to a semi-structured interview process, following an interactive workshop on tooth brushing by dental hygienists.

Results: In 2015, it was determined that 18 (27.3%) parent and carer respondents (middle to high educational level) had never visited a dental hygienist; 26 parents (39.4%) reported to have never been instructed by an oral health professional about how to brush their children's teeth; 33 (50%) brushed their children's teeth twice per day; 11 (16.7%) respondents reported that they tried to limit their children's snacks consumption.

The *Kidsfabriek* 2016 event was greeted with great enthusiasm by two-thirds of the children involved. On a socio-economic level, 70 (64.8%) parent and carer respondents reported an average household income, while 25.9 % (N = 28) said that their income was above average. One-third of adult respondents had not visited a dental hygienist, while 25% (N = 27) stated that they would like to. The children interviewed were very keen to improve their oral self-care and reduce their intake of sugary foods and drinks.

Conclusion: Participation in a public health strategy, such as *Kidsfabriek*, may improve children's, and parents', knowledge and encourage them to improve their home self-care.

Introduction

Oral health promotion is the process by which people, or target groups of people, are able to gain more control over the determinants of their oral health, and improve their oral health.[1] Optimal oral health can be considered a fundamental component of general health, including physical and mental well-being.[2] Recently, a Dutch study looking at social-health-psychology and oral medicine aspects showed that household income and the educational level of the mother are determining factors in the association between ethnicity and dental caries.[3]

In Holland, currently available programmes, such as 'Gewoon Gaaf' (individual long-term approach) and 'Hou je mond gezond' (collective short-term approach), have been developed for oral health professionals to apply in their practices and in primary schools. These programmes are implemented by 'Ivoren Kruis' (Ivory Cross), which is a Dutch society for the promotion of oral health.[4] In contrast to these two programmes, the *Kidsfabriek* event is a voluntary initiative

set up by dental hygienists and focuses on oral health awareness and intentional behavioural change: the children and their parents, or carers, who visit the *Kidsfabriek* event are encouraged to take responsibility for their oral health and oral self-care. Despite knowing that adequate daily home oral care and regular visits to an oral health professional are the best guarantee for maintaining oral health, many people fail to apply an optimal oral self-care routine.[5,6] By developing personal skills and performing daily oral self-care, most common oral diseases can be prevented.[7] It is particularly important for parents, or carers, to establish from an early age the habit of brushing a child's teeth daily.

A systematic review supports the effectiveness of oral health education and promotion interventions for short-term outcomes. However when preventive oral health care interventions are provided by oral health professionals and implemented at primary schools or workplaces, it has been found that people are often not that well informed, and do not continue with the appropriate behaviour for the long-term.[8] Oral health education and promotion programmes may generate short-term improvements in children's oral health knowledge and in outcome measures, such as attitude related to oral hygiene behaviour and dental visits.[8-10] Long-term behavioural changes related to oral public health campaigns are more difficult to effect.[11]

The present studies aimed to evaluate the impact of an annually recurring regional educational and play campaign during *Kidsfabriek* to promote oral health and improve awareness and knowledge among parents and children:

1. Study 2015 was aimed at obtaining insight into parents' knowledge, habits and oral health care towards their children (supervised brushing and parental re-brushing of their children's teeth after the child had brushed).
2. Study 2016 aimed to determine the impact of a public play and learning approach for the promotion of oral health and parents' and children's oral hygiene behaviour (oral self-care).

Methods

The field studies for research with human subjects were conducted according to universal ethical principles. Participation of the visitors during the *Kidsfabriek* 2015-2016 was on a voluntary basis. Interested individuals were informed as to what their participation in the study involved, and no pressure was exerted to take part in the survey and the semi-structured interviews by qualified dental hygienists. The dental hygienists' style of delivery of oral health education to the children was based on their own professional daily practice experience. It was not calibrated. The ethical board, Central Committee on Research Involving Human Subjects, affirms that research which requires filling in a questionnaire for one occasion does not fall under the scope of the Medical Research Involving Human Subjects Act.[12]

In 2014, the first and the last author of this paper participated in the *Kidsfabriek* event – a public oral health awareness campaign. This oral health-educating and health-promoting intervention was carried out in a former factory in Ulft, a small rural village in the Eastern part of the Netherlands. In this region there are currently few oral health care practices and dental services available to this community compared to the Western part of the country. This public event is for children aged between 4 and 12 years and includes sports and numerous learning activities related to culture, nature, animals and health. Playful health education is an important entertainment for children, and the *Kidsfabriek* event is considered to be a unique opportunity to promote oral health messages to parents and children. The aim is to encourage good tooth brushing habits (oral self-care) in a casual relaxed environment away from a dental practice. The 2014 event was considered to be a great success. However, as many children were noted to brush their teeth once per day, rather than the professional and key evidence-based recommendation of twice daily tooth brushing with fluoride toothpaste, four dental hygienists continued their voluntary participation in this public awareness campaign in 2015, and seven continued in 2016 also.

In 2015, a total of 74 parent and carer visitors to the *Kidsfabriek* event were invited to complete a questionnaire, either before or while their children participated in the workshop on tooth brushing. The questionnaire included questions about socio-demographics and oral health behaviour, e.g., visits to dental hygienists, supervised tooth brushing-habits and/or parental re-brushing, and frequency of consuming sugary foods and drinks (snacks).

In 2016, after a professional interactive tooth brushing workshop, provided by volunteer dental hygienists, and after the parents and carers of the children were asked to provide written consent, 108 children were semi-structured interviewed by two dental hygienists (the first and the last author of this paper). The questions focussed on gender, age, tooth brushing frequency, re-brushing by their parents and carers, dentist or dental hygienist visits, sugary foods and drinks consumption, and practices to evaluate their intentional oral hygiene behaviour. The children were rewarded for visiting and participating in the tooth brushing workshop with a 'goodybag'containing various oral health gadgets.

The IBM Statistical Package for Social Sciences 22.0 (SPSS Inc. Chicago. Illinois. USA) was used for data analysis. The data were subjected to frequency distributions, and means, and standard deviations were calculated.

Results

In the 2015 study, eight guests, grandparents, and other visitors to the *Kidsfabriek* event, who had not given permission for publication of the data, were excluded making the final dataset 66 in total. Table 1 shows the distribution of the sample of parents and carers.

Variables	N (%)	Mean (SD), range
Socio-demographics		
Father	20 (30.3%)	
Mother	46 (69.7%)	
Age (years)		39 (5.8), 27-53
Level of Education		
Lower education	10 (15.2%)	
Medium education	30 (45.4%)	
Higher education	26 (39.4%)	
Oral health behaviour		
Perceived oral health (0 = poor – 10 = excellent)		7.3 (1.2), 7-10
Visiting an oral hygienist		
Never	18 (27.3%)	
Once per year	30 (45.5%)	
Two times per year	15 (22.7%)	
Three times or more per year	3 (4.5%)	

Table 1 - Description of socio-demographics and own oral health behaviour in 2015

The parents (28.8% (N = 19), 43.9% (N = 29), and 26.3% (N = 16), respectively) reported to have one child (M^{age}= 8.2 years), two children (M^{age}= 6.7 years) or up to four children (M^{age}= 3.9 years).

Table 2 shows the distribution of the parents' and carers' oral hygiene behaviour towards the children: supervised tooth brushing-habits and/or re-brushing.

Variables	N (%)
Instructed by an oral health professional about how to brush their children's dentition	
Never	26 (39.4%)
Yes	38 (57.6%)
I don't know	2 (3.0%)
Supervised brushing and/or re-brushing	
Never	1 (1.5%)
Not daily	11 (16.7%)
Once per day	15 (22.7%)
Two times per day	33 (50%)
	6 (missing)
Consuming sugary foods and drinks (maximum of 5-7 times per day13)	
Not daily	11 (16.7%)
1-2 times per day	34 (51.5%)
3-5 times per day	19 (28.8%)
6 times or more per day	2 (3.0%)

Table 2 - Description of parents/carers' oral hygiene behaviour towards the children in 2015

Disappointingly, 9 (13.6%) parent and carer respondents reported that they considered the limitation of sugary foods and drinks consumption (snacks) as unimportant, and almost 12 (18.2%) parents and carers reported that they were unwilling to try to limit the frequency of their child's consumption of sugary foods and drinks. A total of 23 (34.8%) parent respondents were unaware that toothbrushing should be performed at least one hour after exposure to acidic soft drinks, and 7 parents (10.6%) thought it unimportant to seek alternative drinks, such as water.

2016 was the third consecutive year that oral health promotion had been a part of the *Kidsfabriek* event: 77 (71.3%) children visited the tooth brushing workshop for the first time, and almost a quarter for second. The public campaign was enthusiastically appreciated by 61.1% (N = 66) of the young visitors, with 25 (23.1%) saying that they had fun, and 15 (13.9%) liking it. The children's intention to change their oral self-care and food and drink consumption was high. Two-thirds of the parents (N = 70) of the children who participated in the workshop had an average household income, and 28 (26%) of the parents had a household income above average.

Table 3 shows the distribution of the sample of 108 children.

Variables	N (%)	Mean (SD), range
Socio-demographics		
Boy	36 (33.3%)	
Girl	72 (66.7%)	
Age (years)		7.5 (2.7), 3-16
Knowledge of an oral hygienist		
Yes, I know	20 (18.5%)	
Yes, a bit	40 (37%)	
No, I know little/nothing	45 (41.7%)	
	3 (missing)	
Visiting or having the intention to visit an oral hygienist		
Yes, regularly visits	17 (15.7%)	
Yes, actually visiting	21 (19.4%)	
Maybe, I don't know	12 (11%)	
Maybe like to visit	27 (25.0%)	
Don't want to visit	26 (24.1%)	
	5 (missing)	

Table 3 - Description of socio-demographics and children's oral hygiene behaviour in 2016

Discussion

The aim of the present studies was to evaluate the impact of a professional oral health education, play and learning approach during the annual *Kidsfabriek* event where oral health and oral self-care among parents and children was promoted. Descriptive findings demonstrate that over all the years these events are appreciated by the children and by their parents. Informal and spontaneous participation was rewarded with a 'goodybag'containing various oral health gadgets, which is current with a child's motivation to co-operate during dental treatment being increased with the offer of a range of rewards.[14]

Parents' and carers' participation in the survey provided insight into their oral health knowledge and of their intentions towards supervised brushing and re-brushing their children's teeth. The children's contributions following the tooth brushing workshop to the semi-structured interviews show the impact that such an approach may have on children's tooth brushing behaviour, their opinions towards dental hygienists and their intentional behavioural change to limit sugary foods and drinks consumption. In addition, it may improve parents' and children's knowledge, and the findings indicate at least a positive short-term impact.

In line with previous studies, oral health-education and health-promoting interventions such as *Kidsfabriek* 2014-2016, led by dental hygienists, may not only encourage an awareness and/or willingness by the parents and carers to take better care of their children's teeth, but may also encourage children's own oral self-care.[8,10,15] Dental hygienists, as highly

motivated professionals specialising in preventive oral health care, play a significant role in promoting oral health and preventing oral disease.[16-18]

It is not clear whether or not the children who participated in the *Kidsfabriek* events had a higher dental caries experience, because most of the parents and carers reported to have an average household income or a household income above average. Children from socioeconomic groups with different ethnic backgrounds or children living in families with lower SES, use more power assertion parenting practices.[3,19]

Both studies are limited because of the small numbers involved. Further limitations are that the various data collected were self-reported opinions, for example about dietary behaviour, but they were not associated with intentional behavioural change. Nonetheless, the *Kidsfabriek* 2014-2016 events showed that population-based, carefully and effectively carried out programmes of personal oral self-care may play an important role in the improvement of oral health awareness. Health awareness is an important first step when it comes to health behavioural change, and therefore the different phases of the Transtheoretical Model of Behaviour Change[20] have to be involved when following oral public health campaign studies. The use of Intervention Mapping (IM)[21] as a protocol for developing theory-based and evidence-based health promotion programmes is conditional, and further research to refine the effects of oral health promotion during *Kidsfabriek* events and other public awareness campaigns is necessary. A Dutch best practice example of an IM and theory based oral health promotion programme for children is 'Trammelant in Tandenland'.[22]

Other findings suggest that to improve children's oral health, educational interventions should focus on both children and mothers to obtain a tailored outcome.[23] Future research should engage parents and carers and include objective clinical and behavioural outcomes in controlled study designs.[9] Regarding the importance of long-term and short-term outcomes for oral health education and promotion programmes, these kind of interventions could be performed in the future with several target groups; children from various socioeconomic groups and ethnic backgrounds, including family members and teachers.[10]

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The authors declare that they have no competing interests.

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