‘Outspoken’ Oral Hygienists Promote Oral Health Care Awareness at Public Events for (Pregnant) Women and Young Mothers

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Background: The aim of these two (pre COVID-19 pandemic) public health studies in Amsterdam were to promote the profession of the oral hygienist and to increase oral health care awareness among (pregnant) women and young mothers, who were visitors of public consumer’s exhibitions.

Methods: Two cross-sectional studies were carried out. In 2018, during the first study, 1,765 visitors of the Household Fair completed a questionnaire. In 2020, during Study 2, 304 visitors of the Nine-Month Fair completed a semi-structured online questionnaire. At both fairs a team of ‘outspoken’ oral hygienists, i.e., members of the Foundation ‘Goed Gebekt’, provided the visitors with tailored advices about general health related to adults, mothers’, and their children’s oral health, using natural routine interviewing, that was based on their own professional daily practical experience.

Results: In Study 1, just over half (53.5%) of a total of 1,742 visitors, (85.7% female) was younger than 45 years old. In Study 2, 210 visitors with a mean age of 30.7 years were included. Most women reported their self-perceived oral health as ‘good’ (mean=8.0, standard deviation=1.3; range 3~10). Qualified (self) employed oral hygienists seem to be known among the visitors, but still only visited upon referral of the dentists. Up to the age of 18 reimbursements by the basic insurance is still unknown to the public.

Conclusion: The Foundation ‘Goed Gebekt’ encourages other oral hygienists to make their own initiatives and experiences public and to share it. Public awareness is needed for oral health promotion and the development of optimally targeted interventions among (pregnant) women and young mothers by oral hygienists.

Key Words: Child-care, Intervention, Public health, Pregnancy, Prevention

Introduction

At the end of August 2015, the Foundation ‘Goed Gebekt’ (GG) was established to promote the profession of oral hygienists in the Netherlands¹⁾. This initiative was taken by 4 self-employed oral hygienists, i.e., working independently, because they observed that their profession was not well-known among the public. In 2014, this observation was confirmed after this quartet of enthusiastic

professionals administered a short questionnaire among 100 random people in a shopping centre. Only 2 respondents reported to be familiar with an oral hygienist and no respondent knew that no referral is required for a visit to an oral hygienist. In the past, since 1978, oral hygienists were working “under the direction and control” of dentists, and thus, on referral from dentists. However, since 2006 a referral from a dentist is no longer required by law. The founders of GG noticed that still the largest

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group of patients is referred by a dentist. Here, they observed a limitation of the Dutch Dental Hygienists' Association in profiling their profession in an adequate, continuous, and efficient manner^{2,3)}. According to the GG, neither the position of highly work-engaged professionals⁴⁾ on the national oral health care map was strengthened or promoted toward the public. Moreover, the GG observed among the oral hygienists themselves a possible cause of unfamiliarity of the profession. Over many years, changes in Dutch legislation and regulations have been implemented and have affected the work and practice situation of oral health care providers^{2,5)}. For instance, a lack of public knowledge of the oral hygienist profession and inadequate cooperation with dentists still results among self-employed oral hygienists in the perception of a dependent position when practicing one's profession independently⁶⁾. In addition, the discussion about the deployment of the type of dental care providers by dentists continues. Since the dentists are employing dental assistants, so-called prevention assistants to delegate the duties of oral hygienists to these 'unqualified' employees, a result may be that oral hygienists get fewer patients⁵⁻⁷⁾. So, it seems obvious that oral hygienists, who obtained an advanced vocational training, and who are therefore qualified professionals need to be more (world) widely known among the public^{8,9)}.

Moreover, to make oral health care in general accessible and transparent, the founders of GG aimed to cluster knowledge about oral health and share it with patients/clients (in the first place) by means of social media. By financial support of their member oral hygienists an accessible website¹⁾ was developed, that can be used by all healthcare providers. GG also developed an appealing advertising campaign by means of posters and postcards. GG focuses its campaigns on the target group of parents, mainly women, (expectant) mothers, who have usually a central role in the family with respect to the health of themselves and their family members. Often they also keep an eye on the financial housekeeping and health care, because they intuitively know that optimal oral hygiene is an important part of general health of which everyone may benefit. Besides, GG concluded that the promotion of oral health and the prevention and early detection of oral

diseases bring economic benefits, as treatment costs are lower and there is less loss of productivity due to absenteeism¹⁰⁾.

Two public health studies were conducted to promote the profession of the oral hygienist, to increase oral health care awareness, and to stimulate regular visits to a qualified oral health professional. The aim of the Study 1 was to get insight in the overall oral health awareness and the attendances to oral health professionals of the visitors of a public consumer's exhibition, the Household Fair¹¹⁾, using a short questionnaire, observations and by screening the consumers' periodontal health condition. The focus of Study 2 conducted at the so-called Nine-Month Fair¹²⁾ was on raising oral health awareness, oral health education and intentional behavioral change among (pregnant) women and young mothers. This study was aimed to motivate this specific target group to take responsibility for their own oral health and oral self-care, including the health care of their babies and toddlers. The latter should preferably be initiated at the age of 6 months, when the first tooth erupts. Most common oral diseases can be prevented by developing personal skills and performing daily oral self-care (by [pregnant] women and mothers or fathers) and, beginning at a young age, by the toddlers themselves^{13,14)}. In the Netherlands and in constituent countries of the Kingdom of the Netherlands, basic oral health care, i.e., with the exception of implants, crown and bridge work and orthodontic treatments, for the youth up to the age of 18 years is for hundred percent reimbursed by the national health insurance^{8,14)}. In Study 2, the emphasis was on conveying both facts among the visitors.

Materials and Methods

1. Ethics statement

Two cross-sectional studies, both in the Dutch capital-city, were conducted in line with universal ethical principles. All visitors participated on a voluntary basis, participants were informed about what participation entailed, and especially in Study 1 no pressure was placed on participants to take part in the periodontal screening by qualified oral hygienists, i.e., members of the Foundation 'Goed Gebekt'¹⁾. The periodontal screening was done using a natural

routine method based on one's professional daily practice experience, without mutual calibration. This is in accordance with the working method during previous public events¹⁵⁾. In both studies, the procedure was consistent with the guidelines of the ethical board Central Committee on Research Involving Human Subjects, which requires filling in a digital or a paper and pencil questionnaire for one occasion does not fall under the scope of Medical Research involving Human Subjects Act¹⁶⁾. Furthermore, these studies were conducted in accordance with the Declaration of Helsinki, an extensive formal written informed consent was waived, and only verbal informed consent was obtained. All visitors were rewarded for visiting and participating in the studies with a 'goody bag' containing various oral health gadgets.

2. Sample and procedure Study 1

From 17 to 25 February 2018, out of an average of 200.000 to 400.000 visitors, mostly women, a total of 1,765 visitors of a public consumer's exhibition, the Household Fair in Amsterdam¹¹⁾ were invited to participate in the study. Due to the health promotion context in which the visitors were situated, the sample was spontaneously selected, and no sample size calculation was performed. Also, GG offered the opportunity to determine the visitors' periodontal condition; by using the Dutch Periodontal Screening Index (DPSI)¹⁷⁾. The DPSI scores were determined for each sextant on the basis of the site with the most severe condition. For practical use in Dutch oral health services, a common description of the values is as follows: (1) DPSI-score 0: 'healthy gum'; (2) DPSI-score 1 and 2: 'gingivitis'; and (3) DPSI score 3 – .3+ and 4: 'an advanced stage of periodontal diseases'^{18,19)}.

3. Sample and procedure Study 2

From 26 February to 1 March 2020, a month before the Intelligent-Lockdown related to the COVID-19 in The Netherlands²⁰⁾ started, visitors of the Nine-Month Fair in Amsterdam were invited to complete a semi-structured online questionnaire. Moreover, the oral hygienists provided the visitors with tailored advices about mothers' and their children's oral health, using natural routine interviewing, based on their own professional daily practical experience.

During the personal face-to-face interviews, the oral hygienists noted their impressions and expert opinions through observations and experiences. Additional to the 'goody bag' visitors were provided with a list of names and addresses of oral hygienists in the city or area where they live.

4. Questionnaire Study 1 and Study 2

The paper and pencil questionnaire (15 items) for the Household Fair in 2018 was developed by a student. The questions were mainly focussed on visits to (self-employed) oral hygienists or others, referrals by dentists, basic insurance and intentional oral health behavior (e.g., opinions and preferences). For Study 2, a semi-structured online questionnaire (15 items) was a revised version of the questionnaire used in Study 1, and tailored by the first and third author by replacing or tailoring questions on gender, age, and level of education of the visitors. Also some other questions and/or answer options were added or replaced. In order to be able to compare the age and educational level of both samples, the collected data in Study 2 were reorganized. Respondents' current age is arranged in age categories. The level of education was categorised as 'low', 'middle', 'high', and 'university'. In these studies, a 'low' educational level refers to primary school and vocational training (VMBO and MAVO); a 'middle' educational level refers to (HAVO/VWO and MBO); a 'high' educational level refers to advanced vocational training/ higher professional/ bachelor, and 'university' refers to scientific education/ master/PhD. In addition, the first question in Study 2, "How do you estimate or do you evaluate your own oral health?", was valued by using a number ranging from "0=very poor to 10=excellent perceived oral health" on a verbal 'Ladder Scale' as the Self-Anchoring Striving Scale²¹⁾. Some questions about visits to oral health professionals and oral health behavior (e.g., opinions and preferences) as used in previous Dutch studies on the determinants of oral hygiene behavior were included^{13,15,22,23)}.

5. Statistical analysis

The IBM Statistical Package for Social Sciences 23.0 (IBM Corp., Armonk, NY, USA) was used for data

analysis. Frequency distributions were created for the nominal variables, and means as well as standard deviations (SDs), were calculated for the quantitative variables. Moreover, by using a helicopter view method, the promotional campaign approaches of GG, were assessed using semi-systematic participatory observation, i.e., the observers (all authors) participated in the situation they were observing.

Results

1. General characteristics of the visitors

In Study 1, a response was received from 1,765 visitors, of which 13 participants did not complete the questionnaire. They were labelled as ‘Missing’ and excluded from the study. In addition, 10 visitors who had not given permission for publication of their data were excluded from the final dataset too.

In Study 2, a response was received from 304 visitors; of which 38 duplicates (identical numbers) in one day, and 38 visitors who had not given permission for publication of their data, and 3 men, who reported being pregnant with

their first child were excluded. This study applied an age limit of 45 years and younger and therefore, 15 visitors were excluded. A total of 210 visitors with an average age of 30.7 years (SD=4.8; range 17~42) were included in Study 2. Almost a third (n=61) reported being pregnant with their first child. The mean age of this subgroup was 29.5 years (SD=4.1; range 22~40). Parents reported to have one child (34.8%, n=73), two children (20.0%, n=42), three children (4.3%, n=9) or up to four children (2.4%, n=5). Children’s mean age was 4.9 years (SD=4.7). Most women reported their self-perceived oral health as ‘good’ (mean=8.0, SD=1.3; range 3~10). A percentage of 12.9% valued their oral health with the number 9, and 15.2% with the number 10, which means ‘extremely good’ and ‘excellent’, respectively. Table 1 shows the general characteristics of the visitors at the Household Fair¹¹⁾ and at the Nine-Month Fair¹²⁾.

2. Observations of the experienced oral hygienists Study 1

In Study 1, after a routine medical anamnesis prior to screening, the periodontal condition of the visitors was

Table 1. General Characteristics of the Visitors

Characteristic	In 2018, at the Household Fair ¹¹⁾	In 2020, at the Nine-Month Fair ¹²⁾	In 2020, at the Nine-Month Fair ¹²⁾ (subgroup)
Gender			
Men	245 (14.1)	8 (3.8)	-
Women	1,494 (85.7)	202 (96.2)	61 (100.0)
Don't want to report	3 (0.2)		
Age (y)			
< 18	12 (0.7)	2 (1.3)	-
19~25	233 (13.4)	14 (9.4)	10 (16.4)
26~35	285 (16.4)	103 (69.1)	47 (77.0)
36~45	402 (23.1)	30 (20.1)	4 (6.6)
46~55	431 (24.7)		
56~65	211 (12.1)		
> 66	168 (9.6)		
Level of education			
Low		23 (10.9)	7 (11.5)
Middle	631 (36.2)	103 (49.0)	24 (39.3)
High	571 (32.8)	63 (30.0)	21 (34.4)
University	510 (29.2)	21 (10.0)	9 (14.8)
Don't want to report	30 (1.7)		

Values are presented as number (%).

-: not available.

indicated by oral hygienists using the DPSI¹⁷⁻¹⁹). On the basis of a general observation, it appeared that the most visitors were associated with the numerically DPSI score 2, followed by a large group of visitors associated with the numerically DPSI score 3 – .

In Table 2 the distribution of the responses to common questions in Study 1 and in Study 2 were shown. Table 3 showed the responses to the other various questions in Study 1 and in Study 2, respectively.

3. Observations of the experienced oral hygienists Study 2

The observations during the semi-structured interviews showed that about three-quarter of the visitors indicated that they only visited an oral hygienist if their dentist deemed it necessary. Other frequently heard and reported comments from the visitors were “Why should I go to the

oral hygienist, I have no problems or complaints” and “I don’t go to an oral hygienist regularly; I only visit the oral hygienist during pregnancy.” Information was often provided that tailored this target group of pregnant women and young mothers, for example, knowledge about hidden sugars or other nutritional advice, and oral care health education for themselves and their babies and toddlers. Many were surprised that they could visit the oral hygienist without referral by a dentist, and a common response for (probably) not intending to visit an oral hygienist in the coming year, was “An oral hygienist is too expensive, and therefore my dentist will clean my teeth”. In general, the responses to the survey were “easy to do”, though some respondents thought the questionnaire was too long.

Table 2. Responses to Common Questions in Study 1 and in Study 2

Question	In 2018, at the Household Fair ¹¹⁾	In 2020, at the Nine-Month Fair ¹²⁾	In 2020, at the Nine-Month Fair ¹²⁾ (subgroup)
Have you ever visited the oral hygienist?			
No	1,186 (68.1)	75 (35.7)	28 (45.9)
Yes	556 (31.9)		
Once per year		64 (30.5)	16 (26.2)
Two times per year		59 (28.1)	15 (24.6)
Three times or more per year		12 (5.7)	2 (3.3)
Did you know that you can make an appointment with the oral hygienist without a referral from the dentist?			
No	1,345 (77.2)	74 (35.2)	19 (31.1)
Yes	397 (22.8)	136 (64.8)	42 (68.9)
Did you know that a visit to an oral hygienist -up to the age of 18- is reimbursed under the basic insurance?	1,345		
No	1,130 (84.0)	63 (30.0)	27 (44.3)
Yes	215 (16.0)	147 (70.0)	34 (55.7)
Now that you know that your child up to the age of 18 can visit the oral hygienist for ‘free’, would you do this?	1,345		
Absolutely not	-	9 (4.3)	1 (1.6)
No/probably not	-	51 (24.3)	14 (23.0)
Maybe	25 (1.9)		
Yes/probably yes	784 (55.6)	71 (33.8)	20 (32.8)
Absolutely yes	536 (39.9)	79 (37.6)	26 (42.6)

Values are presented as number (%) or number only.

–: not available.

Table 3. Responses to the Other Various Questions in Study 1 and in Study 2, Respectively

Question	In 2018, at the Household Fair ¹¹⁾	In 2020, at the Nine-Month Fair ¹²⁾	In 2020, at the Nine-Month Fair ¹²⁾ (subgroup)
Do you know the profession of oral hygienist?			
No	754 (43.3)		
Yes	988 (56.7)		
Working in a paramedical sector?			
No	1,690 (97.0)		
Yes	12 (0.7)		
I used to work in a paramedical sector	19 (1.1)		
I am currently following a paramedical study	21 (1.2)		
Now that you know you can make an appointment without a referral letter, would you do this?			
Absolutely not	13 (0.7)		
No	10 (0.6)		
Maybe	266 (15.3)		
Yes	766 (44.0)		
Absolutely yes	697 (40.0)		
If you have children, your child / children has ever been to an oral hygienist?			
No	876 (50.3)		
Yes	469 (26.9)		
I have no children	397 (22.8)		
In what kind of practice have you visit the oral hygienist?			
A practice of a self-employed oral hygienist		19 (9.0)	5 (8.2)
A employed oral hygienist in a dental clinic		122 (58.1)	29 (47.5)
Does not apply		69 (32.9)	27 (44.3)
Have you ever been treated by another employee (not a dentist or oral hygienist), for example, a prevention-dental assistant?			
No		145 (69.0)	34 (55.7)
Yes		56 (26.7)	23 (37.7)
I don't know		9 (4.3)	4 (6.6)
If you were treated by an oral hygienist: were you referred by the dentist?		134	34
No		42 (20)	12 (19.7)
Yes		92 (43.8)	22 (36.1)
If you have children, were you instructed by an oral health professional about how to brush their children's dentition?			
No		78 (37.1)	-
Yes		70 (33.3)	-
I don't know		6 (2.9)	-
I have no children		56 (26.7)	-
Now that you know what an oral hygienist does, do you intent to visit an oral hygienist in the coming year?			
Absolutely not		9 (4.3)	1 (1.6)
Probably not		56 (26.7)	24 (39.3)
Probably yes		58 (27.6)	16 (26.2)
Absolutely yes		87 (41.4)	20 (32.8)

Values are presented as number (%) or number only.

-: not available.

Discussion

The aim of both public health studies was to promote the profession of the oral hygienist, including stimulating regular visits to qualified oral health professionals. Also, the studies aimed to increase oral health care awareness, to evaluate the impact of a professional oral health education, to gain greater insight into opinions and preferences of visitors during two public consumer's exhibition. Informal and spontaneous visitors were rewarded with a 'goody bag' containing various oral health gadgets. Descriptive findings demonstrate that the visitors rated their own oral health with a relatively high score, in comparison with the visitors of the Kidsfabriek, who valued their perceived oral health as 'ample', with a mean value of 7.3 (SD=1.2)²³⁾. Overestimation of own oral health status could be an explanation as some women may believe that impaired oral health during pregnancy is normal. Findings of women's attitudes, experiences, and behaviors before, during, and after pregnancy have shown that most mothers did not make a dental visit during pregnancy^{24,25)}. Current study-outcomes showed that the existence of qualified (self) employed oral hygienists seems to be known among the visitors, but that oral hygienists were only visited upon referral of their dentists, or were only visited in the practice of a dental clinic. Whereas in Study 1, more than three quarters of the visitors did not know they could visit the oral hygienist without a referral from the dentist, in Study 2, two thirds reported to know they could; of which, in Study 2 even a small percentage (4%) more of the women, who were pregnant with their first child, reported to know that they did not need a referral.

In Study 2, more than two thirds reported to know that a visit to an oral hygienist (up to the age of 18) is reimbursed under the basic insurance, which is more improvement over the results of Study 1. However, still one thirds reported not to know, and more or less the same percentage (like during the Kidsfabriek event²³⁾) reported that they were never been instructed by an oral health professional about how to brush their children's dentition.

In Study 1, 95% of the visitors reported that because they now know that their child up to the age of 18 can visit the oral hygienist for 'free', they would visit an oral

hygienist. In two years this percentage has fallen to 70% and a quarter reported probably not. Moreover, a quarter of all visitors (26.7%) and 37.7% of the women being pregnant with their first child have ever been treated by a prevention-dental assistant. This last percentage is about in line with unpublished data from the Kidsfabriek event²³⁾, at which more than a third of these visitors (36.6%) reported visiting a prevention-dental assistant, and 7% reported not to know. An explanation for this may lie in the fact that parts of the public do not know the difference between a professionally educated oral hygienist^{1,2)} and a prevention-dental assistant^{3,5,7)}. Unpublished outcomes about the impact and findings concerning design, content and the intention or willingness for behavioral change as an effect of a Dutch poster-based intervention about the difference between dental hygienists and prevention-dental assistants during the Kidsfabriek event²³⁾ showed that around 35.2% of the visitors reported to have the intention to inquire by whom they were treated, and that they are willing to give permission if the treatment is not performed by a dentist or oral hygienist.

Both studies are limited because the various data collected were self-reported, for example, about the profession of the oral hygienist and being treated by another employee than a dentist or oral hygienist, e.g., a prevention-dental assistant. Implications for members of GG, especially self-employed oral hygienists, are that they feel threatened in their work. Another implication is the fact, that the public has no real choice; it is a problem for them who are not getting the treatment they deserve when they think they are.

The DPSI¹⁷⁾ used in Study 1 is replaced by the new simplified screening method PPS (periodic periodontal screening). Recently, the new guideline Periodontal Screening is characterized by an important change in classification of diseases²⁶⁾. In Study 1, simultaneously with the House hold Fair the Nine-Month Fair took place. This could mean that among the respondents of Study 1 there were also specific visitors, e.g., pregnant women, who combined their visit to both fairs.

As earlier public health studies performed in Korea²⁷⁾, these both studies showed that participation of GG in public events may play an important role in the impro-

vement of awareness of their profession and of oral health awareness, like in previous Dutch studies^{8,13,22,23}. Especially the latter (oral health awareness) is an important first step when it comes to oral health behavioral change, and therefore the different phases of the Transtheoretical Model of Behavior Change²⁸, and/or applying other social psychological theories and models, for instance, the Health Belief Model²⁹, have to be involved when following oral public health campaign studies.

Future research should give increased attention to the different competencies of qualified oral hygienists and prevention-dental assistants. Also more attention is needed for the fact that directly (without referral) visits to self-employed oral hygienists are possible, and that there is a reimbursement by the basic insurance for people up to the age of 18. The information of both studies might be helpful for public health decision makers to make more appropriate decisions about implementing oral health education with pregnant women, and develop interventions tailored to oral health needs and behaviors of (pregnant) women³⁰. Much more Dutch qualified oral health professionals may follow the approach of GG and interact with the public through public events, schools, well-child care clinics, homes and/or by social media^{1,31}. However, the impact of the COVID-19 pandemic situation, with the limitations of crowded public events, including a social distance of 1.5 meters and wearing face masks³² may affect (viewing from broader perspectives) the pre-COVID-19 findings of both studies³³.

Notes

Conflict of interest

No potential conflict of interest relevant to this article was reported.

Ethical approval

No approval number is needed in this case (behavioral study) needed and available.

Author contributions

Conceptualization: Yvonne A.B. Buunk-Werkhoven, Judith J.E. Sjoerts, and Annemarie Frederiks. Revision

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References

1. Foundation ‘Goed Gebekt’: [Stichting Goed Gebekt, ter bevordering van het vak mondhygiënist]. Retrieved May 7, 2020, from <https://www.goedgebekt.net/>. Dutch.
2. Jongbloed-Zoet C, Bol-van den Hil EM, La Rivière-Ilsen J, van der Sanden-Stoelinga MS: Dental hygienists in The Netherlands: the past, present and future. *Int J Dent Hyg* 10: 148-154, 2012. <https://doi.org/10.1111/j.1601-5037.2012.00573.x>
3. Folgers O, van Splunter-Schneider M, Buunk-Werkhoven

- YAB: Public health and association's membership: desires/duties of oral health professionals. *Int Dent J* 65(S1): S1-S232, 2015.
4. Buunk-Werkhoven YA, Hollaar VR, Jongbloed-Zoet C: Work engagement among Dutch dental hygienists. *J Public Health Dent* 74: 227-233, 2014.
<https://doi.org/10.1111/jphd.12050>
5. den Boer JCL, van der Sanden WJM, Bruers JJM: Developments in oral health care in the Netherlands between 1995 and 2018. *BMC Oral Health* 20: 192, 2020.
<https://doi.org/10.1186/s12903-020-01174-8>
6. Reinders JJ, Krijnen WP, Onclin P, van der Schans CP, Stegenga B: Attitudes among dentists and dental hygienists towards extended scope and independent practice of dental hygienists. *Int Dent J* 67: 46-58, 2017.
<https://doi.org/10.1111/idj.12254>
7. Rederiene G, Aidukaite G, Berlin V, Buunk-Werkhoven YAB, Puriene A: Practice characteristics and views of dental hygienists in Lithuania. *Int J Dent Hyg* 18: 432-438, 2020.
<https://doi.org/10.1111/idh.12458>
8. Buunk-Werkhoven YAB, Reyerse E: What is the impact of oral (public) health promotion, and of interventions for oral (self) care awareness raising and behavior change? *J Dent Oral Disord Ther* 8: 1-4, 2020.
9. Thevissen E, De Bruyn H, Colman R, Koole S: Attitude of dental hygienists, general practitioners and periodontists towards preventive oral care: an exploratory study. *Int Dent J* 67: 221-228, 2017.
<https://doi.org/10.1111/idj.12289>
10. Listl S, Galloway J, Mossey PA, Marcenes W: Global economic impact of dental diseases. *J Dent Res* 94: 1355-1361, 2015.
<https://doi.org/10.1177/0022034515602879>
11. Foundation 'Goed Gebekt': op de Huishoudbeurs [A Household Fair in 2018]. Retrieved April 29, 2021, from <https://www.goedgebekt.net/huishoudbeurs.html>. Dutch.
12. Foundation 'Goed Gebekt': Goed Gebekt gaat naar de Negenmaandenbeurs [the Nine-Month Fair]. Retrieved April 29, 2021, from <https://www.goedgebekt.net/9mndbeurs.html>. Dutch.
13. Buunk-Werkhoven YAB, Burrekers SY: Oral health awareness, promotion of home oral self-care, and professional oral health care among young mothers and their babies: a pilot project. *Oral Health Care* 2: 1-4, 2017.
<https://doi.org/10.15761/OHC.1000134>
14. Verlinden DA, Schuller AA, Verrips GHW, Reijneveld SA: Effectiveness of a short web-based film targeting parental oral health knowledge in a well-child care setting. *Eur J Oral Sci* 128: 226-232, 2020.
<https://doi.org/10.1111/eos.12700>
15. Folgers O, Buunk-Werkhoven YAB, Batenburg R: Periodontal screening during an oral public health promotion campaign: a study among health consumers. *Int Dent J* 69: 289-294, 2019.
<https://doi.org/10.1111/idj.12475>
16. Central Committee on Research Involving Human Subjects (CCMO): Questionnaire research. Retrieved December 28, 2020, from <http://www.ccmo.nl/en/questionnaire-research>.
17. Van der Velden U: The Dutch periodontal screening index validation and its application in The Netherlands. *J Clin Periodontol* 36: 1018-1024, 2009.
<https://doi.org/10.1111/j.1600-051X.2009.01495.x>
18. Van Dannis H, Steures R, Sipos P: [Your gum gets a number]. NVvP, Avenhorn, pp.1-6, 2010.
19. Tandvleescijfer. Retrieved April 29, 2021, from <https://www.tandvleescijfer.nl>.
20. Coronacrisis in Nederland. Retrieved December, 28 2020, from https://nl.wikipedia.org/wiki/Coronacrisis_in_Nederland.
21. Cantril H: The pattern of human concerns. Rutgers University Press, New Brunswick, 1965.
22. Buunk-Werkhoven YA, Dijkstra A, van der Schans CP: Determinants of oral hygiene behavior: a study based on the theory of planned behavior. *Community Dent Oral Epidemiol* 39: 250-259, 2011.
<https://doi.org/10.1111/j.1600-0528.2010.00589.x>
23. Buunk-Werkhoven YAB, Takrovskaja K, Steverink-Jorna LM: Kidsfabriek: Oral health awareness and promotion of oral self-care during a learning and play event for children and parents in The Netherlands. *Annu Clin J Dent Health* 7: 22-25, 2018.
24. George A, Dahlen HG, Reath J, et al.: What do antenatal care providers understand and do about oral health care during pregnancy: a cross-sectional survey in New South Wales, Australia. *BMC Pregnancy Childbirth* 16: 382, 2016.
<https://doi.org/10.1186/s12884-016-1163-x>
25. Ressler-Maerlender J, Krishna R, Robison V: Oral health during pregnancy: current research. *J Womens Health*

- (Larchmt) 14: 880-882, 2005.
<https://doi.org/10.1089/jwh.2005.14.880>
26. Tonetti MS, Sanz M: Implementation of the new classification of periodontal diseases: decision-making algorithms for clinical practice and education. *J Clin Periodontol* 46: 398-405, 2019.
<https://doi.org/10.1111/jcpe.13104>
 27. Jung MH, Park MY: A study on the oral healthcare condition of adult in public health and their knowledge about oral health. *J Dent Hyg Sci* 7: 73-79, 2007.
 28. Prochaska JO, DiClemente CC, Norcross JC: In search of how people change. Applications to addictive behaviors. *Am Psychol* 47: 1102-1114, 1992.
<https://doi.org/10.1037//0003-066x.47.9.1102>
 29. Kim MN, Lim DS, Kim MH, Kim AR, Kim SI, Ahn YS: Effect of health belief factor on oral health related behavior in pregnant woman. *J Dent Hyg Sci* 15: 129-137, 2015.
<https://doi.org/10.17135/jdhs.2015.15.2.129>
 30. Figueiredo MGOP, Takita SY, Dourado BMR, et al.: Periodontal disease: repercussions in pregnant woman and newborn health-a cohort study. *PLoS One* 14: e0225036, 2019.
<https://doi.org/10.1371/journal.pone.0225036>
 31. dental INFO: Promotional video for awareness of the oral hygienist among the general public. Retrieved May 12, 2021, from <https://www.dentalinfo.nl/kennis/communicatie-patient/romotiefilmpje-voor-bekendheid-mondhygienist-bij-het-grote-publiek/>.
 32. Kim JH, Kim MY: Systematic literature review on Coronavirus infectious disease-19 and dental masks. *J Dent Hyg Sci* 21: 1-7, 2021.
<https://doi.org/10.17135/jdhs.2021.21.1.1>
 33. dental INFO: Current information about Corona virus for oral care. Retrieved December 28, 2020. From <https://www.dentalinfo.nl/thema-a-z/medisch-tandheelkundig/coronavirus-waar-vind-je-actuele-informatie/>.