

# What is the Impact of Oral (Public) Health Promotion, and of interventions for Oral (Self) Care Awareness Raising and Behavior Change?

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## Summary

**Objective:** To review survey studies, participatory observation or action studies to explore whether or not oral public health events and campaigns had an impact. It also aims to contribute scientific knowledge on the social psychology of oral health and oral health behavior in different contexts, as a scientific approach of the impact of interventions.

**Methods:** The studies conducted are based into on questionnaires and previous observations, experiences and results of participation in various public health events.

**Results:** There have been various interventions to improve oral (public) health promotion and oral (self) care awareness raising and to promote behavior. These big and small initiatives were from the dental community, e.g., associations, foundations or professionals, artists, business men, and editors. A few interventions target one or more causal factors that are modifiable and have clearly impact on the outcome variable.

**Conclusion:** For the developing of 'post COVID-19' oral health, oral (self) care awareness raising and behavior change interventions, the previous results might give indications as to what could be focal points to promote visits to oral care facilities.

## Introduction

The Lancet editors announced in 2009, "Oral Health: Prevention is key." However, it is also important to focus on: "Promoting optimal oral health is key". From a social-social psychological perspective, health promotion is at least as important as prevention. Prevention is mainly aimed at avoiding or preventing oral health diseases, whereas oral health promotion is the process by which people in general or certain target groups can gain more control over factors (determinants) that affect their oral health and improve their oral health [1,2]. Recent surveillance data still indicate that the best way to avoid oral disease is primary prevention, which implies the promotion of self-care oral hygiene behavior. Moreover, the solution for this long neglected oral health problem is the application of prevention programs, i.e.,

primary prevention programs aim to inhibit the development of oral disease before it occurs [1]. Although simple evidence-based cost-effective prevention programs, including oral behavioral interventions, not only have been carried out in recent decades, but oral health promotion is still not practiced effectively by most individuals [1,3]. Available Dutch prevention programs from the 'Ivory Cross' ['Ivoren Kruis'], such as 'Gewoon Gaaf' ['Just Cool'], i.e., an individual long-term approach, and 'Hou je mond gezond' ['Keep your mouth healthy'] i.e., a collective short-term approach, can be applied in oral care practice and at primary schools [4]. This is important because approaching schools can serve to improve the awareness of the importance of (oral) health and to promote adequate tooth brushing during early childhood [5]. Often it is difficult to determine the effectiveness of a one-time lesson on oral health care [6-9]. Moreover, although most people know that adequate daily oral care at home and regular visits to an oral hygienist and dentist are the best guarantee for optimal oral health, many fail to perform the appropriate behaviour [10-12]. This may be related to two major shortcomings of many existing interventions. Firstly, most interventions do not target the actual psychological determinants of behavior; they are not based on state-of-the-art psychological models and theories of behavior and behavior change. Secondly and related to this, most existing interventions try to influence oral health behavior in very different (groups of) people and in diverse contexts in the very same way; they use the "one size fits all"-approach [1]. Therefore, the present paper reviews survey studies, participatory observation or action studies to explore whether or not oral public health events, such as, consumer's exhibitions, television, radio, social media –Twitter, Instagram, LinkedIn, Facebook– campaigns had an impact. It aims to contribute scientific knowledge on the social psychology of oral health and oral health behavior in different contexts, as a scientific approach of the impact of interventions.

## Methods

The studies conducted are based on questionnaires and previous observations, experiences and results of participation in various public health events. Digital questionnaires have been administered to participants and in some events oral hygienists provided visitors with information and advice in an interactive and semi-structured manner about the dental hygienist and oral health in general or specifically, for instance, regarding the mother and her child(ren). All data collections are carried out according to universal ethical principles. Participation was voluntary, participants were all told what participation meant, and no pressure was exerted to participate in the survey or semi-structured interview. The researchers (professionals) provided participants and visitors with information about oral health, and they did this based on their own professional daily practical experience, without mutual calibration. The ethical board, the Central Committee on Research Involving Human Subjects, affirms that research which requires completion of a questionnaire for one occasion does not fall under the scope of the Medical Research Involving Human Subjects Act [13]. Furthermore, the study was conducted in accordance with the Declaration of Helsinki, an extensive formal written informed consent was waived and thus only verbal informed consent was obtained.

## Results

Since 2013, the Dutch Dental Hygienists' Association (NVM-mondhygiënist) has held a national public campaign every year to promote oral health among the public [14-16]. In a recent television morning program 'Koffietijd' at the end of April 2020 the president of the 'NVM-mondhygiënist' promoted the importance of oral health. The broadcast clip was also provided by social media, such as LinkedIn and Facebook. In general, there were little data, but the program does not seem to have resulted in more new patients coming to the practices of oral health professionals, according to a simple yes/no question among oral health professionals whether new patients had seen the television program.

Almost at the same time, attention was paid to oral health for the general public in Curacao, which is an independent country within the Kingdom of the Netherlands. In 2014, the effect of a poster-based intervention on oral health in relation to soft-, and/or sport drinks that was previously used in a NVM-public campaign in secondary schools, was assessed in Curacao. Of all teenagers, 28.2% felt affected by the NVM-poster, and 39.2% understood the message of this poster. Around 35% reported to have the intention to drink less soft-, and/or sport drinks, and to take better care of their teeth [17]. In addition, a questionnaire connected to paid boost post, consisting of two posters broadcasted every day over 5 days on Facebook to enhance Curaçaoan teenagers' oral health awareness and preventive knowledge related to the consumption of sport-, energy- and/

or soft drinks, showed that 4724 teenagers were reached by this intervention, although only 14 teenagers participated in the online survey. The response was minimal and it is therefore not clear whether the Facebook campaign had resulted in an improvement of teenagers' awareness and preventive knowledge [18]. A previous study among 254 Curaçaoan teenagers showed that despite mostly positive experiences with the various oral care professionals, 10% of the teenagers reported to experience dental anxiety before or during a visit at the dental office. Just 55% reported to have visited a dentist in the year prior to the study. 38% of the teenagers reported to have never visited the dental hygienist. And only 35% of the teenagers knew that oral care is reimbursed by the National Basic Health Insurance for children up to the age of 18 years [17]. In a qualitative follow-up study among teenagers, their parents and oral care professionals, parents reported that they were not aware of this 100% reimbursement too. Moreover, oral health care for adults was experienced as too expensive, and in similar vein, when parents won't visit the dentist they won't bring their children either. Participants noted, for instance, "If the parents won't go to the dentist, they won't bring their child" and "I don't have money for transportation to the dental office". Also quotes, such as: "As long as I don't feel pain, I won't visit the dentist" "I am afraid of the sounds of the dental devices", were mentioned by parents and teenagers [19,20].

As a follow up to the Pick a T- Public campaign to promote the use of toothpicks in restaurants [21], a pilot study was done to assess people's opinions of their oral health in relation to a healthy lifestyle, accompanied by offering toothpicks in a catering-setting within a in a fitness center [22]. The findings showed that providing toothpicks was as much appreciated by the catering managers as by the costumers. Also, it seemed to encourage the interdental oral self-care of the costumers [21,22].

There have been various innovative intervention initiatives from artists, business men, editors and the dental community to promote oral health. As a first example, the project Mondfulness 2.0, which emphasizes that tooth brushing may be a relaxing habit behavior and may improve implicit learning (priming) of optimal tooth brushing [23]. In addition, the Little Golden Book 'Wiwi Wit; the life of a child tooth' was written for children with a major emphasis on tooth-brushing as a habit behavior, promoting implicit learning (priming) of optimal tooth (re) brushing [24]. Another project aimed to promote oral self-care by inducing the use of a sustainable, environmentally friendly bamboo toothbrush challenge [25].

## Discussion

As a central theme in developing and setting out interventions, and also for the implementation, including evaluation, it is important to explore whether the determinants are the same or different in various contexts [1,3]. Much action research has been possibly influenced and halted suddenly by COVID 19. Some

participatory action studies (PAS) aimed to spark a wonderful movement in the community, but came suddenly to a halt by the Corona-situation. This confirms the idea that optimal oral health cannot only be considered part of general health, but should always be placed in the spirit of the times and context [1,3,26]. In order to improve oral (public) health promotion and oral (self) care awareness raising and behavior change, interventions, interventions should target the determined predictors of oral health and related behavior. An adequate intervention targets one or more causal factors that are modifiable and have the largest effect on the outcome variable. After deciding what psychological factors will be targeted with the intervention in order to change oral health and related behavior, the correct communication channel must be chosen, appropriate methods must be selected, and the strategies must be developed. The channel is the way in which the target group is reached, for example, flyers, magazines, internet/e-mail, radio/television, and counselling/therapy or through a community intervention. Intended changes can only take place when the target group is exposed to that channel. It seems that social media, e.g., Facebook and LinkedIn, are mainly channels to provide messages quickly, rather than an option to collect research data [18]. The limited impact of the previously mentioned television program is consistent with empirical – published and unpublished– results from other online mass media campaigns in health education. Oral health care awareness will be best achieved when different bodies in the field of (oral) health work together [2,6,9,15,18,20,22]. Preliminary observations from voluntary participation of the author in public health campaigns of NVM-mondhygienisten [14-16], strongly resembled the author's observations during the nine-month fair for pregnant women. During this last event, that was held just before the COVID-19 crisis, dental hygienists of the Foundation 'Goed Gebekt' [27] focused on increasing the awareness of the professional practice of oral hygienists, as well as on promoting oral health awareness among the visitors. The semi-structured questionnaire used in this study [27] was based on previous experiences of the Foundation 'Goed Gebekt' during a household fair in 2018 [28]. Findings from the first data explorations performed by the first author (SPOH ARTS in collaboration with Foundation 'Goed Gebekt') of the collected data at the nine-month fair for pregnant women are in line with unpublished effect data from a large and expensive public campaign of NVM-mondhygiënisten in 2016. In all cases, more than three-quarters of the participants and visitors indicated that they only visit an oral hygienist if their dentist deems it necessary. Another frequently heard and reported comment from the participants was: "Why should I go to the oral hygienist, I have no problems". Especially visitors at the nine-month fair for pregnant women said: "I don't go to an oral hygienist regularly; I only visit the oral hygienist during pregnancy."

However, the impact of the COVID-19 pandemic may affect these findings. So therefore, for the developing of new oral health intervention, the so called post COVID-19 intervention,

the previous results might give an indication as to what could be focal points to promote visits to oral care facilities. Also more structured and tailored cooperation between oral health professionals, target groups, insurance and the government may lead to more central organised preventive oral health campaigns. From a social psychological point of view, examples of methods for innovative oral (public) health promotion and oral (self) care awareness raising and behavior interventions could be the psychological principles of how change can be brought about, are experiences, argumentation, fear-appeals, framing, feedback and social comparison [3,29].

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