



A conceptual framework for an oral cancer awareness campaign in Northern Germany - Challenges in campaign development and assessment

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Initial impetus for action: Oral cancer is still an underestimated disease in terms of incidence as well as mortality rates; it requires urgent prevention and early detection. At present, there is no best-practice systematic approach to raising awareness and informing the public about this type of cancer in Germany. This article describes a framework that covers the significant stages of conceptual development and campaign design to promote oral cancer awareness in Germany. **Solution:** The challenges of the development, as well as evaluation of an oral cancer awareness campaign are shared in this article. Four key stages of the campaign are defined: (1) mass media, (2) target groups, (3) health care professionals, and (4) epidemiology. For each section, the following levels of assessment are proposed: (a) campaign development (formative assessment), (b) controlling and optimising campaign implementation (process assessment) and (c) measuring outcomes (summative assessment). **Outcome:** A process-oriented assessment concept for each of the four campaign sections was developed and merged to form a matrix, which includes each of the above sections regarding the prevention and early detection of oral cancer, as well as the three stages of campaign assessment. **Future implications and learning points:** The conceptual framework demonstrated that systematic planning and evaluation of different components helped to describe and evaluate an oral cancer campaign: For future campaigns, the use of a matrix covering different campaign targets as well as the entire campaign process, is recommended as a basis for campaign design and evaluation.

Keywords: Oral cancer, early detection, campaign awareness, public, evaluation framework

Initial impetus for action

Oral and pharyngeal cancer is still an underestimated disease in terms of incidence and mortality rates. In 2012, the global combined cancer incidence rate of the lip, oral cavity, and pharyngeal region were estimated to be more than 529,000 cases; this accounts for 3.8% of all cancers (Shield *et al.*, 2017). In Germany, oral (including lips), and pharyngeal cancer is diagnosed in about 13,000 patients each year (Robert Koch Institut, 2015).

Most German patients with oral and pharyngeal cancer only consult a doctor at an advanced tumour stage and as a result, the five-year survival rate is low (48% men vs. 61% women) (Robert Koch Institut, 2015). Tumours diagnosed at advanced stages are more likely to require extensive therapy, which has implications for quality of life and long-term prognosis (Sankaranarayanan *et al.*, 2013).

A number of international studies have shown that the general public tend to know little about oral and pharyngeal cancer, especially the risk factors, symptoms and preventive measures (Eadie *et al.*, 2009; Hertrampf *et al.*, 2012a; Jedele and Ismail, 2010; Logan *et al.*, 2013; Watson *et al.*, 2009).

Therefore, oral cancer was selected as the focus for this project.

In Germany, there is no comprehensive or systematic approach to raising awareness and knowledge of oral cancer among the general public or at-risk groups. Health campaigns have been shown to be capable of motivating people to engage in health-protecting behaviours. However, a conceptual framework and systematic assessment of each phase are relevant prerequisites for implementing and understanding successful campaigns (Valente, 2001). In both the United States and United Kingdom, there is evidence that awareness of oral cancer and self-perceived risk increased when a systematic approach to health promotion was adopted (Eadie *et al.*, 2009; Jedele and Ismail, 2010; Watson *et al.*, 2009). However, prevention campaign strategies should be country-specific to allow context-sensitive planning and implementation, which means that campaigns require adaptation if transferred from other settings (Sallis *et al.*, 2008).

Therefore, intervention strategies would benefit from the flexibility to adapt at multiple levels: from targeting high-risk groups through to regional, national, economic and social policy structures, and environmental conditions.

The aims of this project are to: (1) present the important stages of the development and design of a campaign promoting the prevention of oral cancer in Northern Germany, (2) describe the implementation of the campaign and its assessment matrix, and (3) evaluate the different subsections.

Solution

Development and assessment challenges of the campaign

Health campaigns need to be meticulously planned in several steps. A comprehensive analysis includes the following:

- i) Identification of the required stages and components of the campaign. Alongside this an assessment concept for each structure within the campaign: media coverage/mass media, target groups, healthcare professionals, epidemiological data.
- ii) Development of an assessment strategy with formative, summative and process assessments for each target group.
- iii) Developing, implementing, and optimising campaign activities to meet the objectives and evaluation framework

The assessment strategy should allow the assessment of the desired and undesired impacts of the campaign (effect) and the extent to which the desired goal has been met (effectiveness) (Tashakkori and Teddlie, 2010). In this oral cancer prevention campaign, the assessment strategy focused on four components:

1. Media coverage/Mass media: to draw public attention to the existence of oral cancer and its possible prevention.
2. Target groups: to increase public awareness of the risk of oral cancer and the perception of the availability of easily accessible opportunities for early detection.
3. Healthcare professionals: to increase the professional perception of oral cancer as a public health problem and to encourage early detection.
4. Epidemiological data: to identify target groups and monitor trends to detect any short-term increases in oral cancer incidence and early diagnosis occurring with the intervention

Implications for the campaign design

The formative, process and summative assessments of each of the four strategy components could be summarised in an assessment matrix for the entire campaign (Figure 1) (Campbell *et al.*, 2007).

Three stages of the strategy were evaluated:

- (a) Campaign development (formative assessment).

The campaign strategy was developed from the results of the formative assessment. The media strategy combined local events with public and media relations. The choice of communication methods was adjusted to the target group within their specific social and cultural environment and included free media (coverage in local and regional daily and weekly newspapers, television and radio or magazines), campaign media (website, leaflet, walk-in mouth model), and paid media (poster in public transport). Campaign materials such as brochures and posters were disseminated to healthcare professionals, social welfare organisations,

services and public transport.

The campaign messages were designed to address the barriers and uncertainties identified in the target group (Figure 2). The message strategy was solution-oriented rather than problem-oriented; giving positive information about the simple, free of charge, painless, and effective options for prevention. The campaign promoted dentists as a primary point of contact for examination of the oral cavity and a key profession that could facilitate the early detection of oral cancer. The logo and slogan were designed by the authors of this article.

(b) Control and optimisation of the process (process assessment).

The process assessment aimed to record and respond to possible fluctuations and unproductive developments. Thus, process assessment simultaneously provided possible explanations for the results of the summative evaluation.

(c) Analysis of the outcomes of the campaign (summative assessment) (Valente, 2001).

Summative assessment measures were used to detect the outcomes of each component of the strategy as well as the overarching campaign and to assess possible positive effects and failures.

Ethical approval

The project was approved by the Ethics Committee of the University of Kiel, Germany (A113/06).

Outcome

Media coverage

Formative assessment

The published and online media provide the public with information about oral cancer risks, preventive measures, early detection and therapies (Niederdepppe *et al.*, 2008). Limited empirical data has been published on media coverage of oral cancer. The available data described oral cancer as a marginalised topic in the popular press with public health measures for raising public awareness about the topic remaining mostly unsuccessful; evidenced by a failure to increase media attention (Canto *et al.*, 1998; Graham *et al.*, 2004). Therefore, the primary aim of campaign-related communication was to raise awareness of oral cancer.

Before the campaign, media coverage was collected systematically over a period of three months by a national media monitoring company. Regional media and journalists were enlisted to develop a region-specific concept that would initiate media-compatible occasions for press coverage during the campaign.

Process assessment

The media analysis described for the formative assessment formative was continued via the media monitoring company. Several public relations activities were implemented including: a press conference at the start of the campaign, interviews with journalists in the local and regional press, radio and television stations, presentations at social events such as sports competitions and information booths at consumer fairs. At regular intervals, a walk-in model of a mouth was displayed in public places such as shopping malls (Figure 3). Each activity was accompanied by public relations activities including press releases in regional newspapers and interviews.

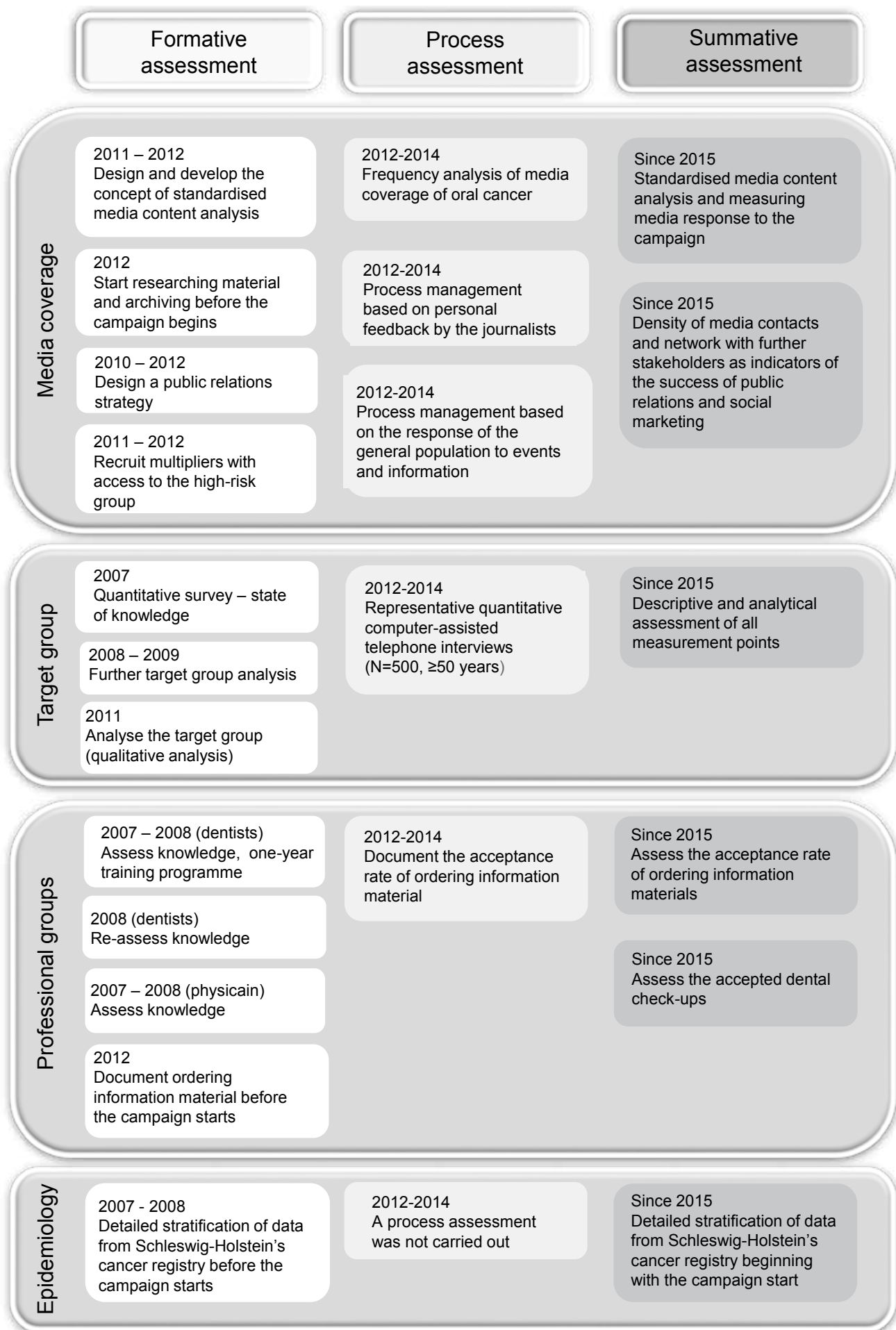


Figure 1: Timeline of the evaluation matrix with subsections for the entire

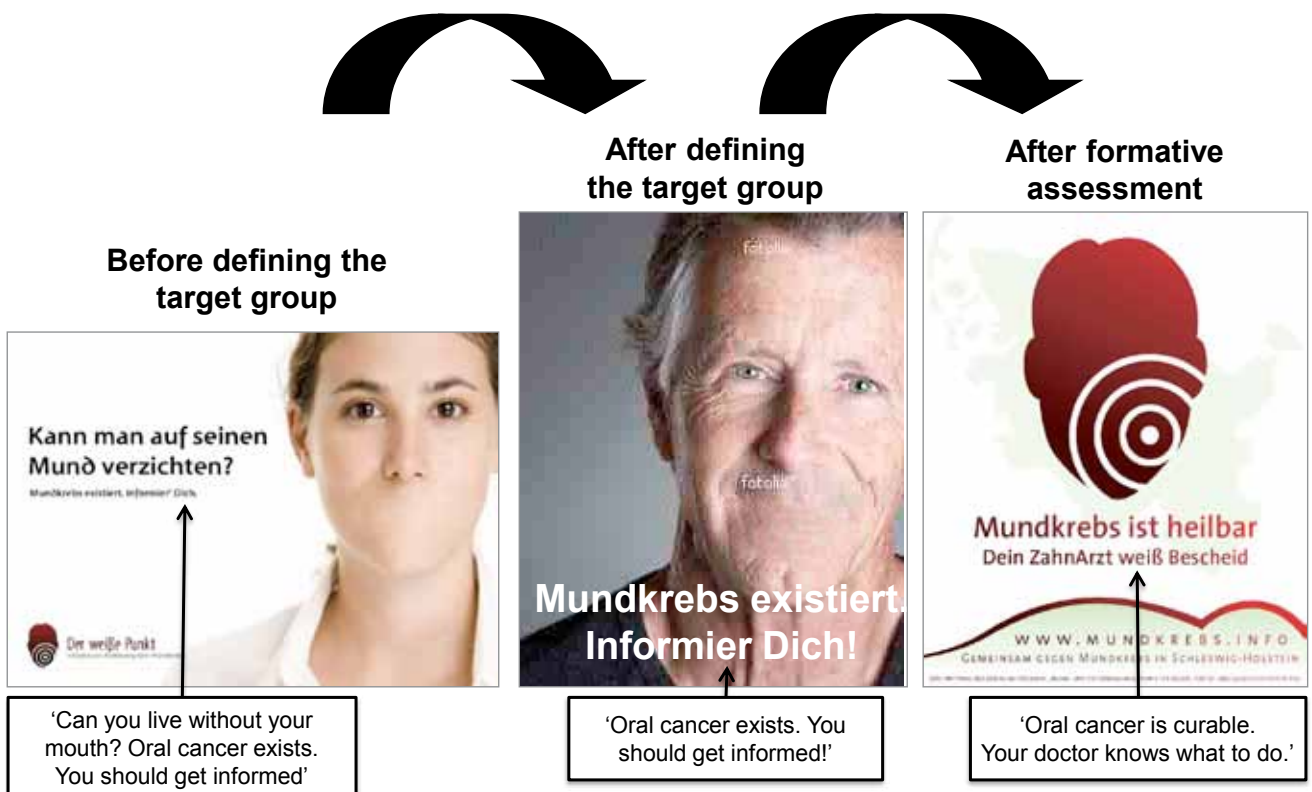


Figure 2: Development of imagery, message and layout of campaign material in relation to the strategy and formative evaluation



Figure 3: Image of the walk-in model of a mouth

Summative assessment

The content analysis described the frequency, rationale, and mode of media reportage on oral cancer. Comparison of coverage before and during the campaign allowed evaluation of any changes in the intensity that could be

attributed to the campaign as a result (1) the size of the network, in this case newspapers, developed in cooperation with media representatives (2) the intensity of press relations, estimated and used as a marker of success of the public relations strategy.

Target groups

Formative assessment

An understanding of the target groups was required to determine an appropriate approach and suitable communication channels for the campaign. In addition to epidemiological data, information was required on oral cancer and the target groups' perceptions and knowledge of the disease. The formative assessment of the target groups consisted of a combination of quantitative and qualitative studies in a two-stage process (Tashakkori and Teddlie, 2010). The quantitative study used standardised computer-assisted telephone interviews, carried out by a national polling firm. This was conducted for the first time in Schleswig-Holstein in autumn 2007 (Hertrampf *et al.*, 2012a) to collect data on the public's awareness of oral cancer, their knowledge about risk factors, symptoms and preventive measures. The interviews revealed a lack of knowledge about the disease, its early indicators, symptoms and risk factors. People aged 60 years and older, retirees, and individuals with a low educational background were less likely to know about the disease (Hertrampf *et al.*, 2012a).

The telephone interview data were combined with secondary data from the cancer registry to design a campaign suited to the target groups.

The qualitative study involved problem-centred guided interviews in autumn 2011. Overall, 18 interviews with 22 participants and one focus group consisting of six participants took place. Each interview was transcribed verbatim and analysed by two researchers. The analysis served three purposes: (1) to understand the target groups, (2) to identify suitable communication channels, (3) to orientate the standardised questionnaire to the target groups (Baumann *et al.*, 2018).

Process assessment

Based on the formative assessment, two process analyses were undertaken with people aged 50 years or older. These representative surveys used computer-assisted telephone interviews (N=500) by the same polling firm in November 2012 and 2013. Each target group was selected using the same protocol as the formative assessment.

Summative assessment

The last assessment, in November 2014, followed the same protocol as described above. Data from all four surveys were evaluated to assess changes in knowledge, awareness, uncertainties and fears when dealing with cancer, as well as health-related behaviours among the target groups.

Healthcare professionals

Formative assessment

The oral mucosa is examined as part of the dental check-up offered by German health insurance. Therefore, dentists within the state were mailed a standardised questionnaire designed to gain information about their knowledge of oral cancer and their examinations of the oral mucosa. Based on these results, a year long programme of further education was developed and implemented. A re-evaluation after the programme used the same questionnaire (Hertrampf *et al.*, 2013).

Medical professionals working in the same region were also questioned using the same questionnaire in cooperation

with the Medical Association and regional professional organisations (Hertrampf *et al.*, 2014). On viewing these data, the medical organisations decided against using the dental one-year education programme and decided that their state associations should offer their own education on this topic. However, all the regional associations supported the integration of dental and medical professionals into the campaign. All dental and medical professionals were informed in writing about the launch of the campaign in April 2012 and invited to order campaign materials such as posters and leaflets free of charge.

Process assessment

The process assessment considered the following to indicate the engagement of healthcare professionals':

- (1) Active participation in the programme including making requests for educational material to be distributed to dental and medical practice patients.
- (2) Frequency of free annual check-ups (examination of the oral mucosa and teeth) undertaken in each practice throughout the campaign using the Association of the Statutory Health of Dentists data.

Summative assessment

The summative evaluation of healthcare professionals considered the same aspects as the process assessment: i.e. Active participation in the programme and the number of free annual check-ups in each practice.

Epidemiological data

Formative assessment

The regional cancer registry (2000–2008) data for Schleswig-Holstein (oral and pharyngeal cancer: C00–C14) provided an overview of incidence and mortality rates according to age and gender (Robert Koch-Institut, 2012).

The grouped display (C00–C14) was not sufficiently specific as data displaying only oral cancer were not available. Therefore, incidence and mortality rates were evaluated in a secondary analysis stratified by age, gender, and tumour stage in order to isolate the data about oral cancer (C00–C06) (Hertrampf *et al.*, 2012b).

Process assessment

A process assessment of the epidemiological data was not conducted, because the data for the years 2000 to 2014 were analysed in the summative assessment at the end of the campaign.

Summative assessment

The detailed stratification undertaken in the formative assessment was the basis for the comparisons of the summative assessment.

Future implications and learning points

The matrix, with its different areas and assessment strategies allowed the planning, implementation and exhaustive evaluation of the campaign. The aim of this strategy is to identify positive effects of the programme and to provide a method for highlighting and critically reflecting upon any challenges or failures that are encountered during its implementation or evaluation.

However, caution must be taken when interpreting the results and making future recommendations as a causal relationship cannot be inferred from the data. For instance, no conclusion can be drawn from the cancer registry data (e.g. a possible temporary increase in incidence rates) regarding the effectiveness of the campaign. Apparent increases in incidence may reflect healthcare professionals' sensitisation to the problem, and subsequent changes to their examination routines, thus leading to more suspected cases being diagnosed and more referrals to specialist centres. Likewise, increased oral cancer awareness in the target group initiated by the campaign does not mean that more people had dental check-ups.

Early contact with the professional groups is advised to encourage their direct involvement, with more time to engage with the topic before the campaign launches. This allowed them to view themselves as an essential part of the campaign. The use of this matrix necessitates comprehensive documentation but facilitates transparency in all areas involved.

In conclusion, the conceptual framework divided planning and assessment across different components and assessment levels to help plan, implement and evaluate the campaign. This type of matrix is recommended as a base for systematic and comprehensive campaign design.

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