



## Counseling

## Follow-up effects of a tailored pre-counseling website with question prompt in breast cancer genetic counseling

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## ABSTRACT

**Objective:** Pre-counseling education helps counsees to prepare for breast cancer genetic counseling and might subsequently result in more positive experiences, improved cognitive outcomes and more experienced control. This study assessed the effects of a website with tailored information and a blank sheet to fill in questions (question prompt; QP), at 1 week and 1 year post-counseling.

**Methods:** Consecutive counsees were randomized to the usual care group (UC) or the intervention group (UC + website + QP). Counsees completed questionnaires pre- and post-counseling and 1 year follow-up. We conducted multilevel regression analyses corrected for time.

**Results:** Intervention group counsees ( $n = 103$ ) were more satisfied about their final visit ( $\beta = .35$ ; CI:  $.06-.65$ ;  $P = .02$ ;  $n = 156$ ) than UC group counsees ( $n = 94$ ). Intervention group counsees also reported more positive experiences with the counseling ( $\beta = .32$ ; CI:  $.06-.59$ ;  $P = .02$ ;  $n = 188$ ) and higher perceived personal control 1 year post-counseling ( $\beta = .51$ ; CI:  $.18-.84$ ;  $P = .002$ ;  $n = 193$ ). No significant effects were found on recall, knowledge, anxiety, cancer worry, risk perception alignment and adherence to breast surveillance advice.

**Conclusion:** This study shows that pre-counseling education providing tailored information and QP, might lead to improvements in experiences with the counseling and perceived personal control 1 year post-counseling.

**Practice implications:** Online pre-visit information is a feasible tool to enhance counsees' experiences.

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## 1. Introduction

Breast cancer patients and their relatives can be referred to genetic counseling to receive education about their breast cancer risk and risk management advice [1]. Genetic counseling aims to enhance feelings of personal control [2] and adherence to surveillance recommendations and to lower breast cancer worry [3]. To make (informed) decisions, counsees need to correctly recall the provided risk information, the surveillance recommendations and the advice on how to communicate the test results with relatives [4,5].

Breast cancer genetic counseling has proven to be reasonably effective in achieving improvements in counsees' level of breast cancer worry [6] and in their perceived personal control [7,8]. However, counsees' recall of information from the counseling and the transmission of this information to their relatives are still impaired [9,10]. Furthermore, while most counsees intend to adhere to the surveillance advice [11], their actual surveillance uptake remains suboptimal [12]. Moreover, genetic counseling appears to lead to improvements in counsees' knowledge about breast cancer genetics [12] and in their risk perception but anxiety levels only show a modest decrease [7,13–15]. Besides, after genetic counseling most counsees continue to overestimate their risks [7,13,16].

To enhance breast cancer genetic counseling outcomes, counsees have been provided with pre-counseling information. Such information shows to improve counsees' satisfaction [17] and their levels of knowledge after the first visit [18,19]. Pre-counseling information might become even more effective by tailoring such

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information to the individual, since tailored information is better recalled than generic information [20,21]. Apart from tailored information, a pre-counseling Question Prompt (QP) on which counsees can write their questions might have additional effect by stimulating more active counsee communication during the counseling [Henselmans 22] and thereby enhancing counsees' recall of information [23–25]. To this purpose, the web-based intervention E-info gene<sup>ca</sup> was developed with information about, for instance, the procedure of counseling and DNA-testing and emotional consequences [26]. The information was computer-tailored [20] to individual counsee's breast cancer status, her risk (based on the cancer family history), age and having children [27]. Additionally, the website provided a blank QP where counsees could write their questions and gave communication advice for the consultations, e.g. 'please pose all your questions and ask for clarification' [28].

In evaluating the effects of pre-counseling information, relevant long term key outcomes of genetic counseling, i.e. information recall, breast cancer worry, perceived personal control and adherence to surveillance recommendations, have not yet been studied. Also, counsees' experience with genetic counseling has not been considered, while this is an important outcome to involve the counsees' perspective [2]. Therefore, an RCT was conducted to test the effects of the pre-counseling, preparatory website E-info gene<sup>ca</sup>. Prior papers about this study showed that intervention group counsees were better prepared for the counseling, in terms of knowledge of breast cancer and heredity and in terms of information needs, after being provided with access to the website [29]. In their first visit, these counsees showed more assertive communication, such as orienting and paraphrasing statements, than counsees in the usual care (UC) group [30]. However, counsees did not ask more questions [30].

As a result of the increased levels of pre-counseling knowledge and more assertive communication during the first visit, counsees might be able to better process the information [31,32]. This might result in higher levels of knowledge, information recall and a more positive evaluation of the counseling. Increased recall of information received in the final consultation might be beneficial for the alignment of the counsees' risk perception with the counselor's estimation, breast cancer worry and adherence to the surveillance recommendations. More positive experiences with the counseling have been shown to be associated with improved perceived personal control and lower anxiety rates [5,33].

The present paper focuses on the intermediate and long-term effects of E-info gene<sup>ca</sup>. We hypothesize that the intervention group will show better outcomes than the usual care group for the key outcomes of genetic counseling, i.e. information recall post-counseling and breast cancer worry, perceived personal control and adherence, 1 year post-counseling. We also hypothesize that counsees in the intervention group will have higher scores on satisfaction, experiences with the counseling, knowledge, risk perception alignment and lower rates of anxiety at 1 week and 1 year post-counseling.

## 2. Methods

### 2.1. Study design

This study was conducted at the department of Medical Genetics of the University Medical Center (UMC) Utrecht. The study was approved by the institutional medical ethical committee and registered in the Dutch Trial Register (ISRCTN82643064). All new consecutive counsees, aged 18 years or older, who were the first in their family to seek breast cancer genetic counseling, were sent information about the study and an opt-out form from February 2008 to April 2010. Counsees were ineligible if they

lacked Internet or email access or when they requested pre-symptomatic DNA-testing in the presence of an identified *BRCA1/2* gene mutation in a relative. All counsees who did not return the opt-out form were randomly assigned 1:1 to the Usual Care (UC) group or the intervention group (UC + website + QP) by a secretary unaware of respondent characteristics using sequentially numbered, sealed, opaque envelopes. UC included a brief standard pre-visit leaflet with information about the counseling procedure and breast cancer genetic counseling according to the Dutch guideline [34] and similar to that provided by the other eight family cancer clinics in the Netherlands. Both UC and intervention group respondents received a login to access the web-based baseline questionnaire (T0). Upon completion of this questionnaire the intervention group respondents received a link to the website E-info gene<sup>ca</sup>. At the start of the first consultation the counselor collected the informed consent form. In the first visit the counselor estimated the risk that the breast cancer in the family was hereditary. There was an indication for DNA-testing for the counsee or an affected relative if the risk of carrying a *BRCA1/2* gene mutation was estimated to be at least 10%. If a DNA-test was performed, counsees attended a follow-up visit approximately 4–6 months later to receive the test results. Regardless of whether there was an indication for DNA-testing, counsees received an estimation of the breast cancer risk for themselves and, if relevant, for first degree relatives. The visits were videotaped with an unmanned camera directed at the counselor. Counsee survey assessments were at approximately 1 week after the final visit (which could either be the first consultation or the follow-up consultation): T3, and approximately 1 year after the final visit (T4), (Fig. 1). Counsees received a summary letter approximately 1 month after the final visit. Ninety-six counsees attended a (intermediate) visit before their final visit. Six of these counsees also had a second intermediate visit. The broader study also included short-term survey assessments after these visits, T1 and T2 respectively. Only questionnaires at T0, T3 and T4 were taken into account in the current paper.

All fourteen breast cancer genetic counselors of the department participated and counseled 4–29 counsees each. Six were genetic counselors of whom three were in training; three were clinical geneticists and five were residents in clinical genetics.

### 2.2. Counsee characteristics

Age, having children, family cancer history and education were assessed in the baseline counsee questionnaire. All but the latter two were derived from the medical file if missing. The breast cancer disease status, referral, indication for DNA-testing and test uptake were derived from the medical file. The indication was unclear for three counsees and was therefore derived from what the counselor had filled in on a questionnaire after the final visit. This questionnaire also assessed the counselor's estimation of the counsee's risk to (re-)develop breast cancer in the future on a visual analog scale (VAS) from 0 to 100%. When applicable, this risk estimation was updated with information from the medical file in case of changes in the family cancer history. Risk estimations were based on the Claus tables and the Claus extended formula as integrated in the Dutch guideline [35].

### 2.3. Questionnaires

The T3 questionnaire assessed the *satisfaction* with the final consultation with the Patient Satisfaction Questionnaire (PSQ) [36]. The PSQ consists of five items assessed on a VAS anchored by 'not at all satisfied' and 'extremely satisfied'. The items assess the satisfaction with needs being addressed, the involvement, information, emotional support and the interaction in general.

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