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Medical Decision Making

Theory-based design and field-testing of an intervention to support women choosing surgery for breast cancer: BresDex☆

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On Behalf of the BresDex group

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ABSTRACT

Objective: Design and undertake usability and field-testing evaluation of a theory-guided decision aid (BresDex) in supporting women choosing surgery for early breast cancer.
Methods: An extended Theory of Planned Behavior (TPB) and the Common Sense Model of Illness Representations (CSM) guided the design of BresDex. BresDex was evaluated and refined across 3 cycles by interviewing 6 women without personal history of breast cancer, 8 women with personal history of breast cancer who had completed treatment and 11 women newly diagnosed with breast cancer. Participants were interviewed for views on content, presentation (usability) and perceived usefulness towards deciding on treatment (utility). Framework analysis was used, guided by the extended TPB and the CSM.
Results: BresDex was positively received in content and presentation (usability). It appeared an effective support to decision-making and useful source for further information, particularly in clarifying attitudes, social norms and perceived behavioral control, and presenting consequences of decisions (utility).
Conclusion: This study illustrates the potential benefit of the extended TPB and CSM in designing a decision aid to support women choosing breast cancer surgery.
Practice implications: BresDex could provide decision-making support and serve as an additional source of information, to complement the care received from the clinical team.

1. Introduction

Women diagnosed with early breast cancer (stage I or II) are typically offered the choice between mastectomy or breast conservation surgery with radiotherapy (BCS) as their primary surgical treatment [1]. A wide variation in surgical management of breast cancer persists, both in the UK and internationally [2,3], with a multitude of factors reported to influence women's surgery choices (e.g., [4–11]). The Theory of Planned Behavior (TPB) [12,13] and the Common Sense Model of Illness Representations (CSM) [14] are candidate theories to structure our understanding of women's surgery choices for breast cancer and to facilitate the design of effective decision support [15]. Decision aids exist to help women choosing surgery for breast cancer; however, none of these are for use in the UK [16–18]. We designed a theory-guided decision aid for women in the UK choosing surgery for breast cancer (BresDex).

The TPB has been extensively used to predict and explain a range of health behaviors including whether to undergo BCS or mastectomy for early breast cancer [19]. The CSM provides a complementary framework focusing on patients' perceptions of their illness and available treatment options in understanding illness-related behavior and coping strategies. Breast cancer is a particularly prominent, emotive condition [20–22] and is likely to be appropriate for analysis by the constructs of this model. Research in this area though is often atheoretical [23], failing to reflect the complexities of decision-making in this area [24]. We propose that through using the TPB and the CSM to structure our

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understanding of women's surgery choices for breast cancer, we can identify the necessary components of a decision aid in this context [15].

According to the TPB, behavior (e.g., choosing to undergo BCS or mastectomy) is predicted by behavioral intentions, which in turn are predicted by *attitudes* towards the behavior, *subjective norm* (how significant others expect one to behave) and *perceived behavioral control* over the behavior (how easy or difficult it is to make the decision) [12,13]. The TPB has been extended to include *anticipated regret* (the regret one anticipates experiencing after engaging in the behavior) which has been shown to enhance the TPB's power to predict intentions [25] in situations such as those faced by women in this context. The CSM provides a framework for understanding how cognitive representations of breast cancer influence the choice of mastectomy or BCS as part of a coping strategy to deal with the threat of breast cancer. The CSM proposes that this occurs in three stages until the individual perceives her coping strategies to be successful, reaching a state of equilibrium: (i) interpretation of the problem; (ii) identification and development of action plan/coping strategies; (iii) appraisal of coping strategies. According to the CSM, individuals generate cognitive representations of their illness structured around 5 key areas: *consequences* (beliefs concerning the impact of breast cancer and/or the treatment on quality of life or functional capacity); *cure/controllability* (perceptions of treatment); *identity* (symptoms of breast cancer and relation to the treatment options); *cause* (perceptions of the causal factors of breast cancer); and *timeline* (perceptions about the duration of breast cancer and the treatment options) [14].

Our aim was to design a theory-guided decision aid to support women choosing surgery for early breast cancer (stage I and II) and to undertake, by qualitative methods, usability and field-testing evaluation (non-patient and patient users respectively). The evaluation focuses on BresDex's ease of use, whether users felt able to consider the relevant information and whether they felt BresDex could support women in making an informed decision consistent with personal preferences.

2. Methods

2.1. Study design

We developed BresDex to support the decision-making of women in the UK with early breast cancer (www.bresdex.com: see Figs. 1 and 2). The extended TPB and the CSM informed the content of BresDex to cover areas in which women require information to make a decision (see Table 1) [15]. The development process is reported elsewhere [26].

Prototypes of BresDex underwent usability and field-testing across three cycles of development (early, mid- and late phase) to assess their usability (how easy they were to use) and utility (how useful they were or were perceived to be) [27]; data from each cycle were used to refine the prototype for the next cycle. Usability testing evaluated non-patient users' interaction with the intervention to identify necessary improvements and was carried out with two samples of women: (i) with no personal history of breast cancer ('unaffected' sample); (ii) with a previous personal history of breast cancer. Views on the perceived usefulness of BresDex were also explored. Field-testing evaluated the use of the intervention in a real-life setting with a sample of women newly diagnosed with breast cancer who were facing the decision [28,29].

2.2. Participant recruitment

2.2.1. Unaffected women

Women were invited to take part in the study via an email circulated to members of university staff. Women older than 30 and with no personal history of breast cancer were eligible for inclusion.

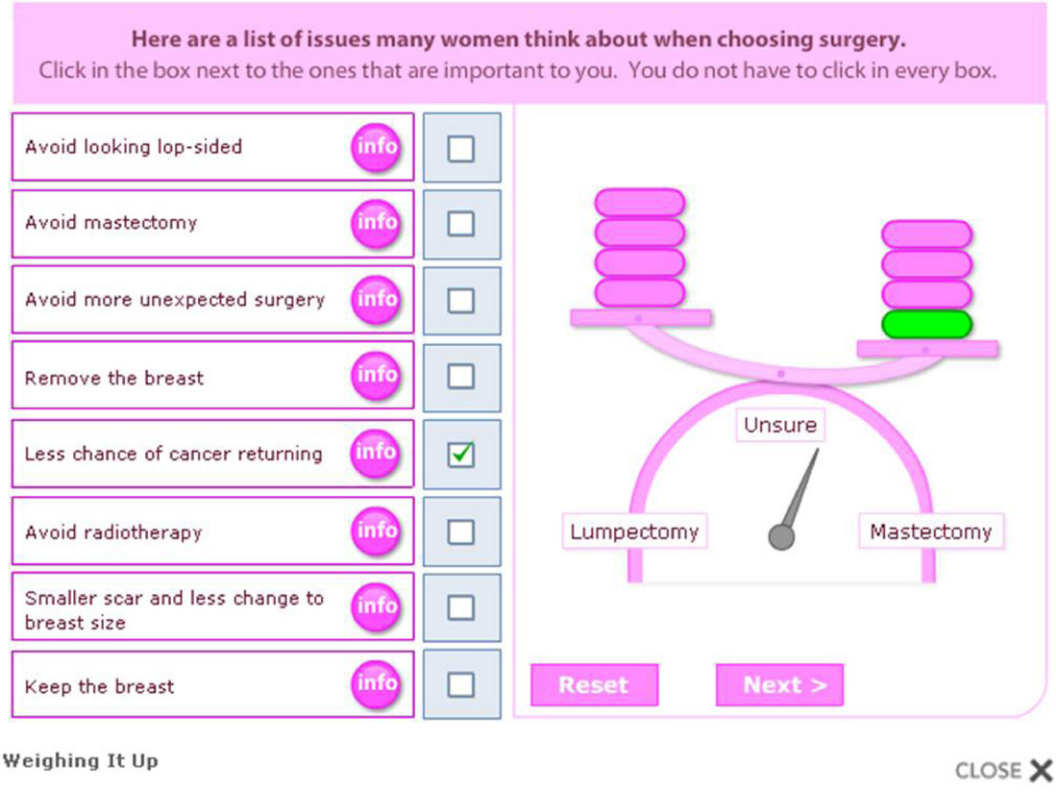

Fig. 1. BresDex 'weighing it up'.