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Medisch Spectrum Twente

Improving preoperative education in breast cancer patients: the influence of monitoring and blunting coping styles.

Master thesis
June 2010

University of Twente
Master Communication Studies

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Improving preoperative education in breast cancer patients: the influence of monitoring and blunting coping styles.

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Abstract

Objective: The aim of this study was to investigate the effect of a monitoring and blunting coping style on receiving preoperative patient information in newly diagnosed breast cancer patients undergoing curative surgery.
Methods: Participants (*N*=42) completed three questionnaires, one after receiving their diagnoses, one after their preoperative consultation and one after undergoing surgery. Patients' coping styles were assessed using the Threatening Medical Situations Inventory (TMSI), dividing patients in high vs. low monitors and high vs. low blunters.
Results: Regarding informational needs, significant differences are found in patients, with high informational needs and active information seeking for high monitors compared to low monitors and high and low blunters. Surprisingly, patient satisfaction was high in all groups, differences in knowledge and anxiety and depression were in line with previous studies. Preoperative anxiety and perceived control haven't been measured before with respect to coping style and were found to be respectively lower and higher in high blunters compared to low blunters.
Conclusion: In addition to previously studied healthcare settings, also in the high threatening health situation of undergoing essential cancer surgery, individual differences in preoperative information needs are clear, which emphasizes the need of being sensitive to these differences in health care practice.
Practice implications: Breast cancer patients might benefit from tailoring preoperative patient information to their cognitive coping style. The use of an animated web-application during the preoperative consultation seems promising in realizing educational improvements and adaption to patient differences. Moreover, information seeking in patients might be facilitated, by making this web-application accessible on the internet early in preoperative care.

Keywords: Preoperative patient education; Information provision; Monitoring; Blunting; Coping style; Web-application; Breast cancer; Surgery.

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1. Introduction

Patients waiting for surgery are facing an uncertain and vulnerable period filled with concern and anxiety, which is especially true for cancer patients. Diagnosis and the following treatment phase are highly distressing, with little time to accept the diagnosis of cancer before having to consider treatment options and deal with the physical impact of the chosen treatment (Galloway et al., 1997). This rapid sequence of events can diminish an individual's sense of control and can lead to feelings of powerlessness and helplessness, which can disorganize social processes, daily functioning and psychological wellbeing, producing an adverse effect on quality of life (Mills & Sullivan, 1999).

Several studies and reviews indicate however, that receiving adequate information can help cancer patients in understanding their disease, evaluating possible consequences, processing their experiences and providing ways to manage the stressors (Lambert & Loiselle, 2007). With respect to undergoing surgery, supplying patients with information about what to expect, makes them capable of visualizing the procedure completely and in detail and build realistic expectations, that increase perceived control and decrease stress and anxiety (Johnson & Leventhal, 1974). Subsequently, receiving sufficient information may lead to increased involvement in informed decision making, greater satisfaction with treatment choices, improved coping skills during diagnosis, treatment and post-treatment phases, increased perceptions of control, increased hope and empowerment, reduced anxiety, fear and distress, improved communication with health care professionals and family members and better physical status and recovery (Eheman et al., 2009; Lambert & Loiselle, 2007; Suhonen & Leino-Kilpi, 2006; Rutten, Arora, Bakos, Aziz & Rowland, 2004).

These positive outcomes emphasize the importance of providing sufficient information attuned to the informational needs of cancer patients. The desire for information about diagnosis, prognosis and treatment is particularly great among cancer patients and a priority in all cancer groups, as has been observed repeatedly in the literature (Steptoe, Sutcliffe, Allen & Coombes,1991; Beaver, Bogg & Luker, 1999; Worster & Holmes, 2008; Eheman et al. 2009). Cancer patients also showed a need for more information compared to other patients (Lithner & Zilling, 2000). Healthcare professionals, however, tend to underestimate their patient's informational needs (Keulers, Scheltinga, Houterman, Van Der Wilt & Spauwen, 2008) and have often failed to individualize the information they provide (Steptoe et al., 1991; Suhonen & Leino-Kilpi, 2006). Nevertheless, being sensitive to individual information requirements is suggested to be important en beneficial for patients as they have found to be different in their informational needs and benefit from different content and quantity of information (Lambert & Loiselle, 2007). With respect to the importance of receiving adequate information and the influence of this information on the patients well-being and satisfaction, improvements have to be made in patient education.

Hence, a better understanding is needed on individual differences regarding information provision and subsequent (psychological) health outcomes and on possible means to realize these improvements within present increasingly demanding health care environments. In order to address these questions, this article will discuss a possible explanation in understanding individual informational needs, which has been found in a person's cognitive coping style, or to the way a patient responds to threatening health situations (Steptoe et al., 1991). A closer look will be taken at the theoretical framework of monitoring and blunting coping style, possible underlying dimensions and the effect of a patients coping style in preoperative healthcare practice. Secondly, as information provision to cancer patients is suggested to positively affect patient satisfaction, distress and perceived control, these outcome measures will be discussed in the light of monitoring and blunting coping style. Finally, the use of computer-assisted patient education will be discussed as a means of improving information provision in current healthcare settings and assisting healthcare professionals to sensitize preoperative information to a patients' coping style.

2. Theoretical framework

2.1. Cognitive coping styles

Acknowledging the importance of sufficient information provision to cancerpatients and possible subsequent beneficial (psychological) health outcomes, patients have found to differ in their informational needs and benefit from different content and quantity of information (Lambert & Loiselle, 2007). Although most patients want as much information as possible, others only want the know the essentials. Early studies on satisfaction with the information received in cancer patient showed disappointing results, although a sufficient amount of information was provided and a simple structure and comprehensibility was guaranteed (Steptoe et al., 1991). An explanation has been found in a person's cognitive style of coping, which represents the cognitive and behavioral efforts of individuals to manage stressful situations (Lazarus & Folkman, 1984).

A large body of literature addressed cognitive coping style approaches, structures and coping measures to enhance understanding of people's responses to stressful situations (Connor-Smith & Flachsbart, 2007). Two central concepts have been established, namely "attention" or "engagement" versus "avoidance" or "disengagement" (Bijttebier, Vertommen & Vander Steene, 2001; Connor-Smith & Flachsbart, 2007). "Engagement coping" involves alertness for threatening information and to actively manage a stressor or associated emotions. "Engagement coping" can be further distinguished by problem-focused coping, intended to influence the source of stress, and emotion-focused coping, intended to minimize the negative emotions such as anxiety and uncertainty (Connor-Smith & Flachsbart, 2007). "Disengagement coping" involves avoiding or denying threatening information, seeking distraction and distancing oneself from the stressor or related feelings (Bijttebier et al., 2001; Connor-Smith & Flachsbart, 2007). Theoretical frameworks corresponding to these concepts are Sensitization-Repression (Byrne, 1961), Monitoring-Blunting (Miller, 1980), and Vigilance-Cognitive Avoidance (Krohne, 1986) of which the monitoring-blunting framework is most frequently used (Bijttebier et al., 2001) and mainly applied to health related situations (Miller, 1987; Myers & Derakshan, 2000). Therefore, in this study the monitoring-blunting framework will be used to identify differences in surgical cancer patients regarding informational needs and defined outcome measures.

2.2. Monitoring and blunting

In order to address individual differences in one's need for information under situations of threat, Miller (1995) identified two main cognitive coping styles: "Monitoring" and "Blunting". Monitoring is defined as 'the tendency to seek threat-relevant information' and blunting as 'the tendency to cognitively avoid threat-relevant information and to seek distraction from threat' (Miller, Brody & Summerton, 1988; Van Zuuren & Wolfs, 1991). Originally monitoring and blunting were considered to be two opposite poles of one dimension, namely seeking for versus distracting from threat-related information (Miller,1981). However, several studies have shown that both styles are independent

(Miller, 1987; Van Zuuren & Wolfs, 1991; Van Zuuren et al. 1996)., referring to “seeking versus not seeking threat-related information” and “seeking versus not seeking distraction under threat” (Bijttebier et al., 2001). Miller (1987) defined four groups: high monitors (information seekers), low monitors (information avoiders), high blunters (distractors) and low blunters (non- distractors).

Previous findings have shown that monitors and blunters differ significantly in their response to medical stress (Miller, 1995). High monitors actively search for information about their illness and are alert to and highly concerned about their risks, symptoms, possible side effects of treatment and other negative consequences (Miller, 1995; Miller et al., 2005). High monitors are motivated by the need to reduce uncertainty and anxiety, gain control over the threat and prepare responses that might reduce the impact of the threat (Shiloh & Orgler-Shoob, 2006). Therefore they prefer extensive and detailed information (Miller, 1995; Ong, et al., 1999; Sheehan, Sherman, Lam & Boyages, 2007). The paradox is that collecting or receiving threatening health information might lead to higher levels of anxiety and arousal en thus to greater levels of distress in high monitors (Miller, 1995). In medical consultations, high monitors appear not only to desire more detailed information than high blunters, they also value kindness and respect by their doctors more and prefer to receive support on emotional consequences (Pieterse, van Dulmen, Ausems, Schoemaker, Beemer & Bensing, 2005). High blunters actively avoid or postpone confrontation with information that might be stressful or negative. They minimize informational uptake and engage in distracting thoughts and behaviors to avoid thinking about the threat in detail (Miller, 1987; Miller, 1995; Miller, Shoda & Hurley, 1996).

2.2.1. Influence of high threat health situations

The differences between monitors and blunters are likely to become especially visible in high threat health situations. Perhaps no health problem results in as much anxiety and uncertainty as facing the threat of cancer (Case, Andrews, Johnson, & Allard, 2005). When being diagnosed with cancer, many people are overwhelmed by fear and a sense of loss of control over their lives. They face several uncertainties such as the consequences of the disease, the burden of treatment, the prognosis and chances of full recovery (Timmermans, van Zuuren, van der Maazen, Leer & Kraaimaat, 2007).

Controllability and predictability are assumed to influence the selection between monitoring and blunting. According to Miller (1981) monitoring is the main coping style in controllable situations because controlling actions can be planned and executed. When the situation is uncontrollable, blunting becomes the main coping style. Without being able to take control an individual can most effectively ‘tune out’ and reduce stress. However, high levels of predictability may influence a person’s ability to distract oneself from the stressor, even in uncontrollable situations. Controllability and predictability can be expected to reinforce each other, with the combination of high predictability and high controllability promoting monitoring and the combination of low predictability and low controllability promoting blunting. This assumption was supported by Van Zuuren, De Groot, Mulder & Muris (1996). Cancer can be characterized as an uncontrollable health threat, which puts monitoring patients at an disadvantage (Timmermans et al., 2007). The patient-specific disease status in terms of curability may also play an important role. As monitoring is helpful when problems can be controlled, high monitors would fare better than high blunters when the cancer is curable (Timmermans et al., 2007). In contrast to engaging in health protective behavior such as breast cancer screening or pap smears, undergoing essential surgery is out of a person’s control.

2.2.2. Influence of demographic and psychological factors

In order to identify monitoring or blunting coping styles in patients, possible underlying dimensions or reasons to engage in either monitoring or blunting coping behaviors have been assessed, such as socio-demographic and psychological factors.

Considering socio-demographics and coping style, consistent relations across studies haven’t been established. Miller (1995) found no relations between coping style and age, education, race, or medical factors. Wakefield, Homewood, Mahmut, Taylor, & Meiser (2007), however, found significant gender differences. Women scored higher than men on monitoring. For blunting scores there was no significant difference. In a general community sample age was not correlated with monitoring or blunting style, just as marital status, educational level and disease status. In individuals with a strong family history of cancer and considering genetic testing for cancer risk significant correlations were found for educational level and age. Educational level was related to blunting scores, with individuals with no post-graduate qualifications having the highest blunting scores. Age was negatively correlated with monitoring scores and positively correlated with blunting scores (Wakefield et al., 2007). Studies of Ong et al. (1999) and Van Zuuren, De Groot, Mulder, & Muris (1996) found slight similar gender and age trends, with women monitoring more than men and older people monitoring less than younger people. Timmermans et al. (2007) found no significant differences for gender, age and years of education in cancer patients undergoing radiotherapy.

With regard to psychological factors, monitoring and blunting have found to be independent of trait anxiety (Miller & Mangan, 1983; Miller, 1987; Steptoe & Vögele, 1992; Miller, 1995; Van Zuuren et al., 1996; Van Zuuren, De Jongh, Beekers & Swinkels, 1999). However, findings of Van Zuuren et al. (1999) suggest low trait anxiety to be related to high blunting.

2.2.3. Impact on outcome measures

As mentioned before, providing cancer patients with sufficient information is suggested to positively affect a patients perceived control, satisfaction and psychological distress and possibly resulting in better physical status and recovery. Assessing the impact of monitoring and blunting coping style on these important outcome measures is therefore of interest. Following, current findings regarding patient satisfaction, psychological distress and perceived control and will be discussed.

2.2.3.1. Patient satisfaction

As monitors desire a large amount of detailed information as a way to reduce their uncertainty and promote feelings of control, high monitors have found to be more demanding patients and are more likely to report low satisfaction with the treatment and the information they receive, compared with low monitors or high blunters (Miller, 1995; Ong et al, 1999; Nordin, Liden, Hansson, Rosenquist & Berglund, 2002; Sheehan et al., 2007; Timmermans et al., 2007). In contrast, blunting patients actively avoid negative or stressful health information and are therefore more likely to be satisfied with the information and attention they receive from the medical team (Miller, 1995).

Consequently, satisfaction with the information provided appears to be unrelated to being better informed in terms of factual knowledge. Steptoe et al. (1991) addressed factual knowledge in metastatic cancer patients and found higher knowledge levels in monitors compared to blunters. Among monitors, reported understanding of their condition was correlated with factual knowledge. Blunters, however indicated that they had a good understanding of their condition, and were therefore satisfied with the information provided. Not because there factual knowledge was high but because their coping style led them to avoid further threatening information.

2.2.3.2. Psychological distress

Another important outcome measure related to information provision is the amount of psychological distress, or anxiety and depression in patients. With regard to a patients' coping style and when faced with a health threat, high monitors and low blunters are more are more anxious than low monitors and high blunters (Miller, 1987; Miller, 1995; Miller, Shoda, Hurley, 1996; Lerman et al., 1996; Van der Zee, Gallandat Huet, Cazemier & Evers, 2002; Van Zuuren, Grypdonck, Crevits, Vande Walle & Defloor, 2006; Shiloh, Koehly, Jenkins, Martin, & Hadley, 2008). An explanation for this heightened distress in especially high monitors might be their greater tendency to scan for threat-related information, which makes them more aware of threats and therefore becoming more aroused (Miller, 1991; Muris & Van Zuuren, 1992). On the contrary, blunters experience less anxiety because of their ability to distract themselves from threatening information. Therefore it is more demanding to be a monitor, both physically and emotionally (Miller, 1995). High monitors are more likely to be worried about their condition and more concerned about undergoing (diagnostic) treatment than blunters in terms of pain, discomfort or side-effects. In addition, monitors experienced pain, discomfort and side-effects for a longer period of time after treatment (Miller, 1995). Although it is to be expected that high monitors undergoing surgery may experience more distress and preoperative anxiety than high blunters, no recent research has addressed this situation. Additionally, monitoring has found to be unrelated to depression. Therefore it seems that monitoring is associated with anxiety, but not with depression. (Miller, Rodoletz, Schoreder, Mangan & Sedlacek 1996; Shoda et al., 1998; Nordin et al., 2002; Shiloh et al., 2008).

2.2.3.3. Perceived control

A third outcome measure that is suggested to be positively affected by providing information to patients is perceived control. Despite the uncertainty and uncontrollability surrounding cancer diagnosis and course of the disease, perceived control is generally believed to be important for successful psychological adjustment (Thompson, Sobolew-Shubin, Galbraith, Schwankovsky & Cruzen, 1993; Henselmans, Sanderman, Baas, Smink & Ranchor, 2009). In literature broadly two categories of perceived control can be distinguished to describe how control is experienced: locus of perceived control (LPC) and focus of perceived control (FCP). Locus of perceived control comprises who individuals believe is in control of their health outcomes; themselves, or others, such as healthcare professionals, God or fate (Williams-Piehota, Schneider, Pizarro, Mowad, & Salovey, 2004). Focus of perceived control comprises what individuals feel they have under their control and to what degree (Newsom, Knapp, & Schulz, 1996). As cancer patients experience several life domains are affected by the disease and its treatment, especially Focus of perceived control plays a central role in adjustment to these changes (Stanton, Revenson, & Tennen, 2007) and will therefore also be focused on in this current study.

In understanding perceived control in cancer patients and covering all major domains of change, multidimensional measures are needed (Beckjord, Glinder, Langrock & Compas, 2009). Multidimensional measures are well-established and validated for locus of perceived control in cancer patients (Beckjord et al., 2009)., but not for focus of perceived control (Norton et al, 2005; Newsom et al., 1996; Thompson et al., 1993). Thompson et al. (1993) measured focus of perceived control in cancer patients with nine items in four areas: emotion/ physical symptom control, relationship control, medical care control and disease control. Recently Beckjord et al. (2009) adapted this previous work and included six factors to represent dimensions of FPC: perceived control over physical symptoms, emotions, medical decisions and care, cancer outcomes, relationships with others and control over life-in-general.

Perceived control is, in a variety of situations, associated with better emotional well-being, more successful coping with stress, better health and physiological outcomes (Thompson & Spacapan, 1991). Related to psychosocial adjustment in cancer patients, Henselmans et al. (2009) and Thompson et al. (1993) suggested that a stronger sense of control is related to lower distress. Hoedemaekers et al. (2007) showed the same results in patients with hereditary heart disease. To speak in terms of FPC-dimensions, especially feelings of control over symptoms and emotional reactions led to lower emotional distress (Thompson et al.,1993). Little is known about the relation between monitoring, blunting and perceived control. Beckjord et al. (2009) showed that their perceived control dimensions were significantly positively correlated with engagement coping, breast cancer patients who reported more focus perceived control reported more action-oriented responses to stress and less disengagement coping responses. The same relations may be true for monitoring and blunting.

2.3. Measuring coping style

To identify dispositional “monitors” and “blunters” the Monitor-Blunter Style Scale (MBSS) was developed and validated, consisting of four hypothetical uncontrollable and stress-evoking scenarios (Miller, 1995). While the MBSS has been used successfully and most frequently in threatening medical contexts, it is argued that medical patients are often unwell or anxious, and might get irritated over the irrelevant hypothetical nature of some MBSS-scenarios, e.g. a hostage experience (Van Zuuren et al., 1996). Moreover, it is argued that coping styles are very situation dependent and therefore cannot be assessed across different situations, but developing a new coping instrument for every stressful situation seems very inefficient (Van Zuuren et al., 1996). For this reason Van Zuuren et al. (1996) developed the Threatening Medical Situations Inventory (TMSI), focusing specifically on the domain of threatening medical situations. Because these medical situations are less hypothetical in nature, the validity of patients’ answers might be enhanced. It also appears to be much more motivating for people to fill in a questionnaire when the situations described are relevant to the situation that they find themselves in.

The TMSI consists of four descriptions of threatening medical situations, varying in predictability and controllability. Each scenario is followed by three monitoring and three blunting alternatives, in random order, to be answered on five-point scales (1 is ‘Not at all applicable to me’ to 5 is ‘Strongly applicable to me’). Total monitoring and blunting scores are obtained by summing up the relevant items. Internal consistancy, test-retest reliability and construct validity have shown to be good for both the TMSI-M and the TMSI-B scales. (Van Zuuren et al.,1996). The range for both scales is 12-60. The monitoring scale of the TMSI relates to three different item-contents: looking for information within the threatening situation, going deeply into the situation by reading about it and getting information about the situation from other doctors, patients or organizations. The blunting scale refers to two item-contents: seeking distraction away from the threatening situation and having an optimistic viewpoint (Ong et al., 1999). The TMSI has proved to be valid and reliable (Van Zuuren et al., 1996). Similar to the MBSS, however, the blunting scale has poorer properties than the monitoring scale. Furthermore, both scales are independent of trait anxiety and depression (Van Zuuren et al., 1996). The TMSI has been used in a variety of medical settings, including pre-natal testing, women experiencing preterm labor, individuals considering HIV testing, and dental treatment (Wakefield et al., 2007) patients preparing for endoscopy (Van Vliet,Grypdonk, Van Zuuren, Winnubst & Kruitwagen, 2004) and patients preparing for receiving radiotherapy (Timmermans et al., 2007)

However, internal consistency and reliability of the monitoring scale of both MBSS and TMSI has proven to be higher than the blunting scale (Miller, 1987; Steptoe et al., 1991; Van Zuuren et al., 1996; Van Zuuren et al., 1999; Ong et al, 1999; Rees & Bath, 2001; Bijttebier et al., 2001). This could be due to the fact that half of the blunting items refer to 'having an optimistic viewpoint', while the others refer to ‘seeking distraction from the situation’. None of the blunting items explicitly concern avoidance of information. All monitoring items, on the other hand, refer to 'seeking information about the situation' (Van Zuuren et al.,1996). Van Zuuren & Wolfs (1991) also argue that monitoring seems to be a more homogeneous concept than blunting. Therefore, several studies only used the monitoring subscale to identify coping style in participants, classifying patients as high or low monitors (Ong et al., 1999; Rees & Bath, 2000; Bijttebier et al., 2001; Sheehan et al. 2007; Shiloh et al., 2008). Other studies have divided participants into two groups, monitors or blunters (Miller & Mangan, 1983). But if monitoring and blunting are different constructs, putting high and low levels together may appear inappropriate (Bijttebier et al. 2001) and may lead to loss of valuable information as investigated by Myers & Derakshan (2000). Therefore, in this present study both scales will be used and all four coping style groups will be defined.

2.4. Computer-based patient education

Having defined monitoring and blunting coping style as an important influencing factor for preoperative information provision and acknowledging the fact that particularly cancer patients desire extensive information, patients appear to remember only few items of all the information they receive from their doctors, despite the use of supportive means like informational brochures (Keulers, Scheltinga, Houterman, van der Wilt & Spauwen, 2008). With respect to the importance of receiving adequate information and the influence of this information on patient well-being and satisfaction as mentioned earlier, improvements have to be made in patient education. The use of multimedia computer-based education seems promising in assisting healthcare providers and improving their educational activities, within present increasingly demanding health care environments.

Multimedia computer-based education programs use video, animation, still pictures and audio with or without the use of supporting text (Wofford, Smith & Miller, 2005; Fox, 2009; Ryhänen, Siekkinen, Rankinen, Korvenranta & Leino-Kilpi, 2010) to educate the user and in the case of interactive education programs actively engage the user through exercises, providing questions and answers or by allowing user-control over sequence or level of detail (Fox, 2009). It has been postulated that ‘‘people retain 10% of what they see, 20% of what they hear, half of what they see and hear, and 80% of what they see, hear and do’’ (Keulers et al., 2007). Therefore multimedia education programs have great potential to increase interest and recall (Fox, 2009). By reviewing existing studies, Wofford et al. (2005), Fox (2009) and Rykänen et al. (2010) examined the effectiveness of these programs. Rykänen et al. (2010) specifically addressed the use of internet and computer-based education programs in breast cancer patients. A vast majority of the studies reviewed, found that computer-based education programs are able to increase knowledge levels significantly. Generally patients were very satisfied with computer programs as a method of education, however patients in the control groups could be equally satisfied (Fox, 2009; Ryhänen et al., 2010). Unfortunately, due to the small number of studies and the variability outcome measures used, the form, domain, quantity, and quality of the education provided, other outcomes such as depression, anxiety, decision-making and quality of life remain to be inconsistent and comparison across studies has proven difficult (Wofford et al., 2005; Fox, 2009; Rykänen et al., 2010). The effect of computer-based patient education on other outcome measures than knowledge are therefore still unclear or not addressed. Moreover, in studies among (breast) cancer patients, most computer programs were developed for decision-making with treatment options or genetic testing (Ryhänen et al., 2010). Studies that solely focus on preoperative preparation are scarce. Heller, Parker, Youssef & Miller (2008) assessed the effectiveness of the use of an computer-based education aid for breast cancer patients undergoing breast reconstruction. Significantly higher knowledge levels were found as higher satisfaction with the operation in patients who received computer-based education. Reduction in anxiety levels have proven not to be significant.

Nevertheless computer-based patient education programs are suggested to have great potential in providing effective patient education, when properly designed and integrated in the existing preoperative educational process (Fox, 2009). Computer-based patient education can leave more time in a consultation for answering questions and discussing treatment options and may lead to better standardized patient education and higher satisfaction (Keulers et al. 2008). As computer based education programs make it possible to allow user-control over level of detail of information, these programs can assist health care professionals to tailor their informational provision to individual needs and preferences and take individual coping styles into account.

2.5. Study aim

Previous review of the present coping style literature suggests that when dealing with patients, and cancer patients in particular, health professionals should be sensitive to individual differences in information needs. The use of computer-based education seems promising in assisting healthcare providers to improve and tailor their educational activities. This might lead to higher knowledge, increased patient satisfaction, increased perceived control and decreased levels of distress and preoperative anxiety. Although studies have been conducted in a variety of cancer-related settings using the monitoring/blunting-concept, most of these studies addressed cancer prevention and early detection. A small number studies was aimed at cancer patients preparing for chemotherapy, but no research addressed the effect of coping style on preparing for surgery and the information and support needed to do this effectively. Outcome measures related to undergoing surgery such as perceived control, distress and preoperative anxiety have not been examined for monitors or blunters. Moreover, the few studies available on the effectiveness of the use of computer-based education programs haven't addressed preparation for surgery in general or for surgery in cancer patients specifically.

To address this last concern, Kunst & van Leerdam Medical Technology, The Medical Spectrum Twente and The University of Twente developed a web-based patient education program to assist information provision to breast cancer patients undergoing breast surgery. This web-application contains of all the basic information a patient needs to know about breast surgery and can be tailored to the specific treatment a patient receives (i.e. lumpectomy and sentinel lymph node dissection, lumpectomy and radical lymph node dissection, mastectomy and sentinel lymph node dissection or mastectomy and radical lymph node dissection). The program uses animated pictures, voice-over audio and supportive text to visualize the specific surgery and will be used during the preoperative education consult and operated by the mamma-care nurse in a supportive way. Basic education on procedures and surgery will be given by means of the web-application. Patient questions and other subjects like complications or prostheses will be discussed personally by the mamma-care nurse. An earlier explorative research (Koertshuis, 2009) tested this web application in a sample of breast cancer patients, without audio features and on patient satisfaction solely. This follow-up study will test the effect of an improved version of this web application with addition of audio voice-over features on several outcome measures.

Taking current knowledge on monitoring and blunting coping style and the development of the web-application in account, the aim of this study was threefold. We first wanted to assess how breast cancer patients experience the conventional oral preoperative consultation and explore how important outcome measures manifest during preoperative care. Secondly, we were interested in the effect of monitoring and blunting coping style on receiving preoperative patient education in breast cancer patients. As mentioned earlier no recent research regarding monitoring and blunting coping style has addressed undergoing surgery in (breast) cancer patients which is a high threat and uncontrollable situation. Thirdly, we wished to test the effect of using the animated web application compared to conventional oral patient education on a variety of outcome measures.

2.5.1. Research questions

This article addresses the first and second study aim and will examine patient satisfaction with the conventional oral preoperative consultation and the effect of monitoring and blunting coping style on receiving preoperative information during this consultation and related outcome measures. The following research questions will be answered:

1) How do breast cancer patients experience the conventional oral preoperative consultation?
2) To what extent do levels of information needs, satisfaction with medical care and mamma care, knowledge, psychological distress, preoperative anxiety and perceived control differ during preoperative care?
3) To what extent is monitoring and blunting coping style in breast cancer patients related to socio-demographic characteristics?
4) How do monitoring and blunting coping styles relate to satisfaction with the preoperative consultation, medical care, mamma care and surgery?
5) How do monitoring and blunting coping styles relate to information seeking behavior and preoperative information needs during preoperative care?
6) How do monitoring and blunting coping styles relate to knowledge, psychological distress, preoperative anxiety and perceived control during preoperative care?

3. Methods

3.1. Study design

A METC approved comparison group design was set up with an experimental group and a control group. The mamma-care centers of two hospitals in the Netherlands participated in this study. Baseline measures were performed before and after the conventional preoperative patient consultations. Subsequently, both hospitals implemented computer assisted patient education by means of a web-application and experimental measures were performed.

3.2. Subjects & procedure

Breast cancer patients who received curative breast surgery in The Medical Spectrum Twente and Medical Centre Leeuwarden participated in this study. All newly diagnosed breast cancer patients following the mamma-care treatment trajectory of both hospitals were invited to participate in a survey to improve information provision and care to future breast cancer patients.

After women are diagnosed with breast cancer they receive their treatment proposal and information about their surgery, further treatment and possible risks and complications in a consultation with their oncologist and nurse practitioner. All women received additional written patient information. Following the consultation, the study was introduced and patients were asked to participate. Inclusion of patients was registered, as was exclusion and the reasons for exclusion. Approximately one week after this first consultation all patients receive a preoperative education consult with their mamma-care nurse. During this consult patients received tailored information about their specific surgery, treatment procedure and about what to expect after the surgery and personal questions were answered. To ensure all the information needed according to hospital standards was provided, the nurses used an informational checklist. Additional information was provided in the form of Breast Cancer Foundation patients information brochures and information on patient associations.

During their treatment trajectory participants were asked to complete written questionnaires. These were administered at three times:

1) After the first consultation with their oncologist and nurse practitioner participants received the first questionnaire with an informed consent form and were asked to fill these out ant home and hand them in during their preoperative education consult with their mamma-care nurse, approximately one week later. After this consultation participants received both questionnaire 2 and 3.
2) Participants were asked to fill out the second questionnaire after the preoperative education consult en before their surgery, also approximately one week later.
3) After they had surgery, the mamma-care nurse reminded participants to fill out the third questionnaire during their check-up phone call. Participants were asked to fill out this third questionnaire before they received the test results of their surgery, again approximately one week later. The first questionnaires were stored by the mamma-care nurses and regularly collected by the researchers. The second and third questionnaires were sent back to the researchers by mail. Mamma-care nurses were similarly briefed on this procedure and provided with a checklist to reduce bias in patient responses.

3.3. Instruments & measures

Table 1: Overview of the variables and the measurement moments

Variables	**Instrument**	**T1**	**T2**	**T3**
Patient characteristics				
Age		+	+	+
Education		+	-	-
Marital status		+	-	-
Experience bc		+	-	-
Type of surgery		-	+	+
Health		-	-	+
Coping style	TMSI	+	-	-
Satisfaction				
Medical care		+	+	+
Mammacare centre		+	+	+
Consultation	IN-PATSAT32	-	+	-
Surgery		-	-	+
Preoperative information provision		-	-	+
Information seeking/needs				
Internet acces		+	-	-
Internet use		+	-	-
Information received		+	-	-
Information read		+	-	-
Additional information		+	-	+
Additional sources		+	-	+
Additional subjects		+	-	+
Preoperative information	APAIS	+	+	- *
Knowledge		+	+	-
Anxiety & Depression	HADS			
Anxiety		+	+	+
Depression		+	+	+
Preoperative anxiety	APAIS	+	+	- *
Perceived control	Perceived Control Scale	-	+	+

T1: Measurements after diagnosis, before consultation; T2a: Measurements after consultation, before surgery; T3: Measurements after surgery, before test results.
* = anxiety and information needs about test results only.

Questionnaire 1 included:

1) *Patient characteristics*
   Including age, education, marital status and experience with breast cancer, either personal or in family members or friends.
2) *Internet access and use*
   This item assessed if patients have access to the internet and how often they are on the internet, "(almost) every day", "several times a week", "once a week", "less often" or "never".
3) *Information received (1 item)*
   One item asked if patients had received the written information from their surgeon, nurse practitioner or mamma-care nurse.
4) *Having read the information provided (1 item)*
   Another item asked if patients have read this information and if yes, to what extent: "thoroughly", "all of it" or "partly".
5) *Information seeking behavior (2 items)*
   Two questions assessed information seeking behavior before the consultation with the mamma-care nurse. One item asked for additional information searching and if yes, by which source. Another item asked for information categories. Both items were based upon reviews of Eheman et al. (2009) en Rutten et al. (2005).
6) *Monitoring/Blunting - (24 items)*
   Monitoring and blunting characteristics of patients were assessed by Threatening Medical Situations Inventory (TMSI, Van Zuuren et al, 1996) The TMSI includes four descriptions of threatening medical situations, including experiencing headaches and dizziness, being diagnosed with hypertension, considering heart surgery and being diagnosed with appendicitis. Each scenario is followed by three monitoring and three blunting alternatives, in random order, to be answered on five-point scales (1 is 'Not at all applicable to me' to 5 is 'Strongly applicable to me').
   Internal consistancy, reliability and construct validity have shown to be good for both the TMSI-M and the TMSI-B scales. The range for both scales is 12-60. Scale scores for monitoring and blunting were computed by summing up the scores for the responses on each scale. Internal consistency for both the monitoring and blunting is good. A Cronbach's alpha of 0.86 was found for the monitoring scale and α= 0.82. for the blunting scale. Mean scores for monitoring and blunting respectively were 33.21 (SD=9.28) and 33.89 (SD=8.29). With respect to monitoring this score is in line with the mean score reported by Van Zuuren et al. (1996) in a sample of surgical patients (M=32.5, SD= 10.3). For blunting, Van Zuuren et al (1996) reported a higher level (M=39.5, SD= 8.27). The monitoring and blunting scales were unrelated to each other (*r*= 0.24, *p*= 0.15), but showed a fairly high and positive correlation in contrast to other studies positive (Muris et al., 1994; Van Zuuren et al., 1996; Timmerman et al., 2007; Wakefield et al., 2007).
7) *Knowledge (10 items)*
   To assess patients knowledge 10 statements were posed about breast cancer) in general (5 items and breast surgery specifically (5 items) , to which patients respond with: "true", "false" or "don't know". Knowledge scores were calculated based on the number of correct answers.
8) *Satisfaction with care (2 items)*
   To describe satisfaction with care, participants were asked to rate both satisfaction with hospital care in general and satisfaction with mamma-care centre on a scale from 1 to 10.

9) *Level of distress: (14 items)*
   Level of distress was measured with The Hospital Anxiety and Depression Scale (HADS, Zigmund & Snaith, 1983) The HADS was developed to identify anxiety and depression among patients. It is divided into two subscales, Anxiety (HADS-A) and Depression (HADS-D) both containing seven intermingled items. Varying response categories on a four-point Likert scale are scored from 0 to 3, with a total score of 21 for each subscale (Bjelland, Dahl, Haug & Neckelmann, 2002). As Zigmund and Snaith defined, scores less than eight on either subscale are considered to be non-cases, score between eight and ten, borderline cases and scores greater than ten are indicative of the presence of psychological distress (Sellick Edwardson, 2007).
10) *Preoperative anxiety (9 items)*
   In order to measure preoperative anxiety the Amsterdam Preoperative Anxiety and Information Scale (APAIS; Moerman, Van Dam, Muller & Oosting, 1996) was included, consisting of a Anxiety Scale and a Need-for-Information scale. Originally 4 items refer to anxiety of anesthesia and the surgery and 2 items to the need for information. Three items were added on anxiety and need for information about test results. Patients were asked to evaluate to what extent the 9 statements applied to them on a five-point scale ranging from 1= “not at all” to 5=“to a large extent”.

Questionnaire 2 included:

1) *Type of surgery (1 item)*
   One item asked what type of surgery the patient must undergo.
2) *Satisfaction consult mamma-care nurse (11 items)*
   Satisfaction with the preoperative consultation with the mamma-care nurse was measured with The EORTC IN-PATSAT32 (Brédart et al., 2005). This instrument is originally composed of 32 items assessing satisfaction of cancer patients with the quality of doctors and nurses, the care provided, organization and hospital environment. Responses are rated on a 5-point scale ranging ‘‘poor’’, ‘‘fair’’, ‘‘good’’, ‘‘very good’’ or ‘‘excellent’’. Psychometric properties have shown to be good. Only the subscale assessing satisfaction with doctors was used. Terminology was adapted to “mamma-care nurse” instead of “doctor”. Three items measured technical skills, three items measured interpersonal skills, three items information provision and one item availability. The frequency of visits/consultations was excluded, because this was not applicable to the “mamma-care” situation. In an additional item participants were asked to rate satisfaction with the preoperative consult on a scale from 1 to 10.
3) *Perceptions of control (9 items)*
   Patients' perceived control was measured with nine items adapted Thompson et al. (1993).Two of the items asked about emotions or physical symptoms, three about relationships, two referred to medical care, one asked about the progression of the disease, and the final item asked about general perceptions of control. Respondents were asked "To what extent do you feel that you have control over. . .?" for each item. The responses were given on a 4-point response scale ranging from 1 *(no control at all)* to 4 *(a great deal of control).*
4) Satisfaction with care, Knowledge, Level of distress and Preoperative anxiety were assessed as in questionnaire 1.

Questionnaire 3 included:

1) *Type of surgery (1 item)*
   One item asked what type of surgery the patient underwent.
2) *Health (1 item)*
   One item asked how the patient felt physically, Responses ranged from: ‘‘excellent’‘‘, ‘very good’’, ‘‘good’’, ‘‘fair’’ or ‘‘poor’’.
3) *Satisfaction with surgery (1 item)*
   Satisfaction with surgery was measured on a 5-point scale ranging from: “very unsatisfied” to “very satisfied”.
4) *Information received about surgery (4 items)*
   Four items assessed the way patients looked back on the information received about their surgery. Questions asked were: “How did the surgery met up to your expectations?”- “much worse” to “lot less worse” than expected. “I perfectly understand what happened during the surgery” - “totally disagree” “totally agree”. “The information I received about the surgery was in agreement with reality” - “totally disagree” “totally agree”. “Looking back, did you miss information about the surgery?” - “Yes” - “No” and “If Yes, what kind of information?”

5) *Information seeking after consult mammacare nurse (2 items)*
   Two questions assessed information seeking behavior after the preoperative consultation and before surgery as in questionnaire 1.
6) *Preoperative anxiety (4 items)*
   Only the three items on anxiety and need for information about test results were measured.
7) Satisfaction with care, Perceptions of control and Level of distress were assessed as in questionnaire 1.

Table 1 shows all variables and measurement moments. Table 2 gives an overview of scale reliability and correlations between T1, T2 and T3.

Table 2: Reliability of scales and Pearson's correlations between scales at T1, T2 and T3

		T1			**T2**			**T3**		
Scale	**N**	**Items**	**α**	**N**	**Items**	**α**	**N**	**Items**	**α**	***r* between T1,T2,T3**
TMSI										
Monitoring	38	12	0.86	-	-	-	-	-	-	-
Blunting	37	12	0.82	-	-	-	-	-	-	-
PATSAT	37	10	0.97	-	-	-	-	-	-	-
Knowledge	41	10	0.76	39	10	0.38	-	-	-	0.66**
HADS										
Anxiety	41	7	0.91	40	7	0.92	36	7	0.89	1-2= 0.90 **/ 1-3=0.73** / 2-3= 0.74**
Depression	40	7	0.90	40	7	0.90	35	7	0.90	1-2= 0.88**/ 1-3= 0.85** / 2-3= 0.85**
Total	40	14	0.94	40	14	0.94	35	14	0.94	1-2= 0.92** / 1-3=0.85** / 2-3=0.86**
APAIS										
Total Anxiety	40	6	0.81	37	6	0.86	-	-	-	0.72**
Total Info	40	3	0.71	36	3	0.72	-	-	-	0.48 **
Perceived control	-	-	-	30	9	0.89	27	9	0.91	0.66**

* Significant at the *p* < 0.05 level (2-tailed). ** Significant at the *p* < 0.01 level (2-tailed).

3.4. Data analysis

Data were analyzed using SPSS 18.0. To assess the reliability of all scales used, internal consistency was assessed using Cronbach's alpha. The determine the goodness of fit between the hypothesized coping style constructs described by van Zuuren et al. (1996) and the sample data, the factor structure of the TMSI was examined with confirmatory factor analysis (CFA), using Principal Component Analysis and oblique rotation. Eigenvalues and explained variance were 5.69 (23.7%) and 4.40 (18.4%) for the Monitoring and Blunting component respectively with total explained variance of 42.1%. The two factor structure of the model was an adequate fit to the data, χ^2 = 538.6(298), p< .0005. Eigenvalues and explained variance were in line with previous studies (Van Zuuren et al., 1996; Wakefield et al., 2007).

For knowledge, perceived control, preoperative anxiety, preoperative information need and information seeking behavior variables, that were measured at two different times paired-samples t-tests were performed. For anxiety and depression, satisfaction and the subscales 'test results' for preoperative anxiety and information need, that were measured at three times, Repeated Measures ANOVA was conducted. Differences between high and low monitors and high and low blunters on all variables were analyzed using t-tests. For categorical variables 'marital status', 'experience with breast cancer', 'internet access', 'information received', 'additional information seeking' and 'information missed before surgery' chi-square tests were performed. High and low monitors and high and low blunters were defined by a median split. Patients who scored 36 or higher on the monitor scale, were considered to be high monitors. Patients who scored 33 or higher on the blunter scale, were considered to be high blunters.

4. Results

Breast cancer patients were included during 4 months, from November 2009 until March 2010. Twelve patients were excluded by the nurse practitioners due to: mental retardation (5), receiving neoadjuvant chemo therapy (1), being reactive (3), being palliative (1) and entering mamma patient care via x-ray (2). Five patients weren't asked to participate because they had surgery without interference of mamma patient care. Initially 74 patients were asked to participate in the study. Thirteen patients immediately indicated not wanting to participate, 16 patients were included to participate, but eventually decided not to. Three participants were excluded by the researchers because they hadn't completed the first questionnaire. Except for two respondents, all patients completed all three questionnaires. One second and third questionnaire was deleted because they were filled out on the same day, two third questionnaires were deleted because they were filled out after receiving the test results. In total, 42 patients completed the first questionnaire, 40 patients the second and 37 the third.

Patients were aged between 42 and 79 (*M* = 59.4). Of the sample 36% had a lower education, 43% a middle education and 21% a higher education. Moreover, 17% was single, widowed or divorced, 83% was married or living together. Furthermore, 2% of the women were diagnosed with breast cancer earlier, 31% experienced breast cancer through family, 24% through friends and 43% had no previous experience with breast cancer. Concerning treatment, 49% underwent lumpectomy and sentinel lymph node dissection, 5% lumpectomy and radical lymph node dissection, 35% mastectomy and sentinel lymph node dissection and 11% mastectomy and radical lymph node dissection.

4.1. Preoperative consultation

The first research question of interest is how breast cancer patients experience the conventional oral preoperative consultation. Table 3 outlines the mean scores on questions asked with regard to the technical and interpersonal skills, information provision and availability of the mamma care nurse.

After surgery four more questions were asked in retrospect with regard to the information patients received prior to surgery. Scores were high on all subscales regarding the preoperative consultation, representing scores of "good" and "very good". Patients rated their preoperative consultation with a mean 8.4 on a 1-10 scale. Surgery met up to patients expectations "as expected", patients agreed in understanding what happened during the surgery and found that the information they received about the surgery was in agreement with reality. Some patients missed specific information on the situation they found themselves in after surgery, but most people were satisfied with the information they received. Taking this together it can be concluded that breast cancer patients are satisfied with the conventional oral preoperative consultation.

Table 3: Mean scores and standard deviations (S.D.) for satisfaction with preoperative consultation and information provision in breast cancer patients

Satisfaction with preoperative consultation	***M*(S.D.)**
Consultation (*N*=40)	
Technical skills	
Her knowledge and experience of your illness?	3.8(0.7)
The treatment and she provided?	3.7(0.7)
The attention she paid to your physical problems?	3.7(0.7)
Interpersonal skills	
Her willingness to listen to all of your concerns?	3.8(0.7)
The interest she showed in you personally?	3.8(0.7)
The comfort and support she gave you?	3.7(0.7)
Information provision	
The information she gave you about your illness?	3.7(0.8)
The information she gave you about your medical tests?	3.8(0.7)
The information she gave you about your treatment?	3.8(0.7)
Availibility	
The time she devoted to you during the consultation?	4.0(0.7)
Score 1-10	8.4(0.9)
Preoperative information provision (*N*=37)	
How did the surgery met up to your expectations?	3.4(0.9)
I perfectly understand what happened during the surgery	4.2(0.5)
The information I received about the surgery was in agreement with reality	4.0(0.6)
Looking back, did you miss information about the surgery?	
Yes	13.9%
No	86.1%

4.2. Outcome measures during preoperative care

Table 4: Mean scores and standard deviations (S.D.) for main variables on T1, T2 and T3 for breast cancer patients

	T1 **(N=42)**	**T2** **(N=40)**	**T3** **(N=37)**	***P***
Preoperative Info				
Anesthesia	2.5(1.4)	2.6(1.4)	-	n.s.
Surgery	3.3(1.4)	3.3(1.2)	-	n.s.
Test results	3.9(1.3)	4.0(1.3)	3.8(1.4)	n.s.
Total	9.6(3.2)	9.8(3.0)	-	n.s.
Information seeking				
Additional information	54.8%	-	40%	n.s.
Sources	1.7(0.7)	-	2.1(1.4)	n.s.
Subjects	5.0(2.1)	-	3.6(1.4)	n.s.
Satisfaction Care				
Medical care	8.1(0.9)	8.2(0.8)	8.0(0.8)	n.s.
Mammacare centre	8.6(0.9)	8.5(0.8)	8.3(0.8)	n.s.
Satisfaction surgery	-	-	3.9(0.9)	-
Knowledge				
General	3.5(1.1)	4.0(0.9)	-	< 0.01 [1]
Surgery	4.0(1.3)	4.5(0.7)	-	< 0.01 [1]
Total	7.4(2.0)	8.5(1.1)	-	<.0005 [1]
Anxiety & Depression				
Anxiety	8.7(4.9)	7.8(4.7)	5.4(4.1)	<.0005 [2]
Depression	4.8(4.1)	5.0(4.2)	3.9(3.6)	0.03 [2]
Total	13.9(8.1)	13.2(8.3)	9.6(7.4)	<.0005 [2]
Preoperative Anxiety				
Anesthesia	5.1(2.6)	5.1(2.4)	-	n.s.
Surgery	5.7(2.1)	5.8(2.0)	-	n.s.
Test results	6.9(2.3)	6.9(2.3)	6.5(1.8)	n.s.
Total	17.7(5.5)	17.8(5.7)	-	n.s.
Perceived Control				
Emotion/symptom	-	6.5(1.0)	6.4(1.1)	n.s.
Relation	-	10.3(1.9)	10.5(1.6)	n.s.
Medical care	-	5.9(1.1)	6.3(1.2)	0.01 [1]
Progression of disease	-	2.9(0.9)	2.9(0.8)	n.s.
Overall	-	3.3(0.6)	3.2(0.7)	n.s.
Total	-	29.1(4.4)	29.7(4.6)	n.s.

[1] = *P*-value based on t-test [2] = *P*-value based on F-test

Questionnaires were administered after diagnosis, after the preoperative consultation and after surgery to investigate differences in levels of information needs, knowledge, satisfaction with medical care and mamma care, perceived control, psychological distress and preoperative anxiety.
Mean scores on these outcome measures are presented in table 4, with accompanying *P*-values for significant change in time from T1, to T2 and T3.

Informational needs prior to surgery didn't change in time. Higher scores on "information about surgery" and "information about test results" reveal that these subjects are most important to breast cancer patients. With regard to additional information more than half of the patients actively searched for information after they received breast cancer diagnosis and before their preoperative consultation. After this consultation, 40% of the patients searched for more additional information. The three sources mainly used were friends or family, the internet and other patients. The mean amount of subjects patients searched for decreased slightly from 5 subjects at T1 to 3-4 subjects at T3. Top five of subjects searched for after receiving breast cancer diagnosis (T1) were: breast cancer, surgery, additional treatment, recovery after surgery and prognosis. This, to lesser extent, remained the same after the preoperative consultation (T3) with shared scores for prognosis, follow-up and emotional support. Satisfaction is high with medical care and mamma care, receiving a mean score of 8 out of 10 and 8.5 out of 10 respectively. Satisfaction with medical care stays constant during preoperative care, whereas satisfaction with care of the mamma care centre is slightly decreasing from T1 to T2 and T3. Patients also indicated to be satisfied with their surgery. With respect to knowledge levels, significant differences are found before and after receiving preoperative consultation for "general breast cancer knowledge" as well as for "knowledge about surgery" and therefore also "total knowledge". As respondents proved to be active additional information seekers these increased knowledge levels cannot be attributed to the preoperative consultation with certainty. Regarding psychological distress, high levels of anxiety and depression weren't found. As Zigmund and Snaith defined, scores less than eight on either subscale are considered to be non-cases, score between eight and ten, borderline cases and scores greater than ten are indicative of the presence of psychological distress (Sellick & Edwardson, 2007). Moreover, anxiety and depression decreased significantly during preoperative care, with low scores after surgery as might be expected. For preoperative anxiety, scores remained the same at T1 and T2 and decreased somewhat for anxiety for test results at T3, which can be considered surprising as patients at T3 were waiting for their test results. Furthermore, patients experienced more anxiety for test results compared to anxiety for anesthesia and surgery. To conclude, patients considered perceived control to be reasonable on all dimensions. Scores of perceived control didn't change from T2 to T3 except for "control over medical care", which was higher after surgery than before surgery.

Having discussed satisfaction and other outcome measures in all breast cancer patients during preoperative care, a closer look will be taken on the effect of having a monitoring or blunting coping style, starting with differences in socio-demographic characteristics.

4.3. Coping and socio-demographics

Table 5 outlines differences in breast cancer patients with a monitoring or blunting coping style with respect to socio-demographic characteristics. In line with findings of Van Zuuren et al. (1996), Ong et al. (1999) and Wakefield et al. (2007) high monitors appeared to be younger than low monitors and high and low blunters. Additionally age was negatively correlated with monitoring scores and positively correlated with blunting scores (see table 6). Moreover, high monitors were higher educated than low monitors and high and low blunters. Another interesting finding is a higher experience with breast cancer in high monitors, either in themselves, family or friends. Previous experience with breast cancer may therefore facilitate a high monitoring coping style. Both monitors and blunters consider their physical health status as being “good”. As expected no differences were found for marital status.

Table 5: Mean scores (S.D.) and percentages for patient characteristics in low and high monitors (LM/HM) and low and high blunters (LB/HB)

Patient characteristics	**LM (N=21)**	**HM (N=17)**	***P***	**LB (N=20)**	**HB (N=17)**	***P***
Age	61.6(9.7)	55.7(9.0)	n.s.	58.1(9.9)	60.4(9.8)	n.s.
Education						
Low	38.1%	23.5%	n.s.	35%	29.4%	n.s.
Middle	42.9%	47.1%	n.s.	45%	47.1%	n.s.
High	19%	29.5%	n.s.	20%	23.5%	n.s.
Marital status						
Single	19%	17.6%	n.s.	20%	17.6%	n.s.
Married	81%	82.4%	n.s.	80%	82.4%	n.s.
Experience breast cancer						
Yes (self/family/friends)	47.6%	64.7%	n.s.	55%	58.8%	n.s.
No	52.4%	35.5%	n.s.	45%	41.2%	n.s.
Health	3.2(0.6)	3.0(0.7)	n.s.	3.1(0.6)	3.1(0.7)	n.s.

4.4. Coping and patient satisfaction

Table 7 and 8 present mean scores on outcome variables for high and low monitoring and high and low blunting respectively. Considering high monitors as more demanding patients and more likely to report low satisfaction with the care they receive (Miller, 1995; Ong et al, 1999; Sheehan et al., 2007) there is surprisingly little difference between satisfaction scores of high and low monitors on care, preoperative consultation and preoperative information provision. Also no differences appeared in satisfaction with information provision by the mamma care nurse, as have been found by Steptoe et al. (1991); Nordin et al. (2002) and Timmermans et al. (2007). Correlations for satisfaction with the preoperative consultation were low and positive for both monitors and blunters.

As expected (Miller, 1995) high blunters were more satisfied with the care they received, which reached significance for satisfaction with medical care at T2 and T3. For satisfaction with surgery, the preoperative consultation and preoperative information provision, differences between high and low blunters were small.

4.5. Coping and preoperative information

Regarding preoperative informational needs, high monitors desire more information than low monitors, which reached significance for “information about surgery” at both T1 and T2.

There was no difference between how well patients read the written information they received during their diagnosis consultation, both high and low monitors read “all of it”. Internet access is high in both groups, with a somewhat higher score of internet use in high monitors than in low monitors, “once a week” to “once a week or less”, respectively. Additional information seeking proved higher in high monitors at T1 and T3. High monitors also searched for more subjects at T1, but surprisingly low monitors searched for more subjects at T3.

Although it was expected that information needs would be lower in high blunters, scores for high and low blunters were inconsistent. Among blunters internet access was also high and internet use “once a week or less”. Surprisingly, additional information seeking was somewhat higher in high blunters compared to low blunters for T1 and T3, but lower compared to high monitors. At T3 high blunters searched for more subjects than did low blunters.

4.6. Coping and knowledge, distress, anxiety and perceived control

The final research question addressed the relations of monitoring and blunting coping style to psychological distress, preoperative anxiety and perceived control during preoperative care.

Concerning knowledge, scores proved to be higher in high monitors opposite to low monitors, in line with findings of Steptoe et al. (1999). For high blunters knowledge levels were a little lower than low blunters' knowledge levels. For psychological distress high monitors experienced more anxiety than low monitors, which is especially true at T1. Depression scores were also slightly higher in high monitors. For high blunters both anxiety and depression were lower at T1 and T2 compared to low blunters, but surprisingly not at T3. Furthermore, anxiety and depression scores were positively correlated to monitoring scores and negatively correlated to blunting scores (see table 6). Regarding preoperative anxiety comparable findings were found. Except for anesthesia, high monitors were more anxious for surgery and test results. In high blunters preoperative anxiety appeared to be lower compared to low blunters, which was significant at T3. Finally, with respect to perceived control, differences in high and low monitors were inconsistent for various dimensions of control. For high blunters, however, control scores were higher compared to low blunters. Perceived control scores were all positively correlated to blunting scores, contrary to monitoring scores (see table 6).

Table 6: Pearson's Correlations for Monitoring and Blunting for T1, T2 and T3.

	T1		**T2**		**T3**	
	Mon	**Blunt**	**Mon**	**Blunt**	**Mon**	**Blunt**
Patients						
Age	-0.29	0.04	-	-	-	-
Education	0.19	0.08	-	-	-	-
Health	-	-	-	-	-0.27	0.05
Satisfaction						
Care						
Medical care	0.09	0.32	0.02	0.39 *	0.12	0.47 **
Mammacare centre	0.23	0.21	0.04	0.19	0.07	0.21
Surgery	-	-	-	-	-0.15	0.04
Consultation						
Technical skills	-	-	0.06	0.15	-	-
Interpersonal skills	-	-	-0.08	-0.06	-	-
Information provision	-	-	0.14	0.09	-	-
Availibility	-	-	0.20	0.08	-	-
Total	-	-	0.07	0.09	-	-
Score	-	-	0.12	0.21	-	-
Preoperative info provision						
Understanding	-	-	-	-	0.13	0.08
Met up to expectations	-	-	-	-	-0.00	0.02
Agreement reality	-	-	-	-	-0.02	0.15
Preoperative Info						
Anesthesia	0.28	0.35 *	0.2	0.07	-	-
Surgery	0.53 **	0.18	0.55 **	-0.17	-	-
Test results	0.17	0.05	0.23	-0.09	0.13	0.10
Total	0.41 *	0.24	0.50 *	-0.11	-	-
Information seeking						
Information read	0.29	0.25	-	-	-	-
Internet use	0.26	-0.04	-	-	-	-
Sources	0.13	-0.03	-	-	-0.45	-0.60 *
Subjects	0.52 *	0.09	-	-	-0.43	0.42
Knowledge						
Overall	0.12	0.14	-0.03	-0.20	-	-
Surgery	0.28	-0.13	0.23	-0.10	-	-
Total	0.29	-0.00	0.14	-0.23	-	-
Anxiety & Depression						
Anxiety	0.10	-0.05	0.09	-0.04	0.10	-0.17
Depression	0.11	-0.20	0.13	-0.11	0.09	-0.04
Total	0.08	-0.17	0.11	-0.08	0.10	-0.11
Preoperative Anxiety						
Anesthesia	0.01	0.26	-0.02	0.11	-	-
Surgery	0.21	-0.07	0.13	-0.10	-	-
Test results	0.20	-0.04	0.21	-0.29	0.26	-0.42 *
Total	0.15	0.08	0.13	-0.11	-	-
Perceived Control						
Emotion/symptom	-	-	-0.01	0.29	-0.09	0.40 *
Relation	-	-	-0.04	0.26	0.11	0.21
Medical care	-	-	0.04	0.35 *	0.19	0.35
Progression of disease	-	-	0.19	0.18	0.22	0.28
Overall	-	-	0.02	0.36 *	-0.21	0.42 *
Total	-	-	0.04	0.39 *	0.15	0.47 *

* Significant at the p < 0.05 level (2-tailed). ** Significant at the p < 0.01 level (2-tailed).

Table 7: Mean scores and standard deviations (S.D.) for main variables on T1, T2 and T3 for high and low monitors

	T1			**T2**			**T3**		
Monitoring	**Low (N=21)**	**High (N=17)**	***P*[1]**	**Low (N=20)**	**High (N=16)**	***P*[1]**	**Low (N=17)**	**High (N=16)**	***P*[1]**
Preoperative Information									
Anesthesia	2.5(1.5)	2.5(1.2)	n.s.	2.8(1.5)	2.7(1.2)	n.s.	-	-	
Surgery	3.0(1.4)	3.9(1.2)	0.04	2.9(1.2)	4.0(0.9)	0.01	-	-	
Test results	3.8(1.4)	3.9(1.4)	n.s.	3.7(1.3)	4.3(1.2)	n.s.	3.5(1.6)	3.9(1.2)	n.s.
Total	9.2(3.6)	10.2(2.9)	n.s.	9.1(3.2)	11.1(2.4)	n.s.	-	-	
Information seeking									
Information read	3.2(0.4)	3.3(0.6)	n.s.	-	-		-	-	
Internet acces	90.5%	94.1%	n.s.	-	-		-	-	
Internet use	2.6(1.7)	3.1(1.8)	n.s.	-	-		-	-	
Additional information	52.4%	70.6%	n.s.	-	-		37.5%	50%	n.s.
Sources	1.8(1.1)	2.1(0.5)	n.s.	-	-		2.1(1.9)	1.8(0.7)	n.s.
Subjects	3.6(1.9)	5.6(2.0)	0.03	-	-		4.3(2.8)	2.9(1.7)	n.s.
Satisfaction									
Care									
Medical care	8.3(0.9)	8.1(0.9)	n.s.	8.4(0.9)	8.1(0.7)	n.s.	7.9(0.8)	7.9(0.9)	n.s.
Mammacare centre	8.6(1.0)	8.7(0.8)	n.s.	8.6(1.1)	8.4(0.5)	n.s.	8.4(0.9)	8.3(0.7)	n.s.
Satisfaction surgery	-	-		-	-		3.9(1.0)	3.8(0.8)	n.s.
Consultation									
Technical skills	-	-		11.3(2.3)	11.3(1.3)	n.s.	-	-	
Interpersonal skills	-	-		11.5(2.4)	11.3(1.2)	n.s.	-	-	
Information provision	-	-		11.5(2.5)	11.5(1.2)	n.s.	-	-	
Availibility	-	-		4.0(0.7)	4.0(0.5)	n.s.	-	-	
Total	-	-		38.5(7.6)	38.5(2.9)	n.s.	-	-	
Score	-	-		8.4(1.1)	8.4(0.6)	n.s.	-	-	
Preoperative info provision									
Understanding	-	-		-	-		4.1(0.6)	4.3(0.4)	n.s.
Met up to expectations	-	-		-	-		3.4(.8)	3.6(0.7)	n.s.
Agreement reality	-	-		-	-		4.1(0.6)	3.9(0.7)	n.s.
Information missed	-	-		-	-				
Yes	-	-		-	-		25%	6.3%	n.s.
No	-	-		-	-		75%	93.8%	n.s.
Knowledge									
General	3.6 (0.8)	3.8(0.8)	n.s.	4.1 (0.9)	4.1(0.8)	n.s.	-	-	
Surgery	4.0 (1.1)	4.5(0.7)	n.s.	4.3 (0.8)	4.7(0.5)	n.s.	-	-	
Total	7.6 (1.4)	8.2(1.2)	n.s.	8.4 (1.2)	8.8(0.7)	n.s.	-	-	
Anxiety & Depression									
Anxiety	8.5(5.0)	9.4(4.2)	n.s.	8.0(5.8)	8.2(3.6)	n.s.	5.0(4.7)	5.7(3.3)	n.s.
Depression	5.1(4.7)	5.5(3.1)	n.s.	4.9(4.7)	5.1(3.3)	n.s.	3.4(3.6)	3.8(3.5)	n.s.
Total	13.9(9.0)	14.9(6.5)	n.s.	12.9(10.0)	13.3(6.7)	n.s.	8.4(8.1)	9.5(6.1)	n.s.
Preoperative Anxiety									
Anesthesia	5.5(2.9)	4.6(2.4)	n.s.	5.6(2.5)	4.7(2.5)	n.s.	-	-	
Surgery	5.5(1.9)	6.2(2.3)	n.s.	5.7(2.3)	6.1(1.8)	n.s.	-	-	
Test results	6.7(2.6)	7.2(1.9)	n.s.	6.6(2.4)	7.6(1.9)	n.s.	6.1(2.1)	7.0(1.3)	n.s.
Total	17.6(5.8)	17.8(5.3)	n.s.	17.8(6.5)	18.5(4.4)	n.s.	-	-	
Perceived Control									
Emotion/symptom	-	-		6.3(1.3)	6.4(1.1)	n.s.	6.5(1.1)	6.1(1.3)	n.s.
Relation	-	-		10.8(1.6)	9.9(2.2)	n.s.	10.7(1.4)	10.7(1.4)	n.s.
Medical care	-	-		6.0(1.4)	5.9(0.7)	n.s.	6.2(1.5)	6.5(1.0)	n.s.
Progression of disease	-	-		2.7(1.0)	2.9(0.8)	n.s.	2.8(1.0)	3.2(0.5)	n.s.
Overall	-	-		3.4(0.7)	3.2(0.5)	n.s.	3.4(0.7)	3.1(0.7)	n.s.
Total	-	-		29.8(4.3)	28.2(4.1)	n.s.	29.9(5.5)	30.0(4.1)	n.s.

[1] = *P*-value based on t-test

Table 8: Mean scores and standard deviations (S.D.) for main variables on T1, T2 and T3 for high and low blunters.

	T1			T2			T3		
Blunting	**Low (N=20)**	**High (N=17)**	P^1	**Low (N=20)**	**High (N=15)**	P^1	**Low (N=17)**	**High (N=15)**	P^1
Preoperative Info									
Anesthesia	2.4(1.3)	2.7(1.4)	n.s.	2.7(1.4)	2.8(1.4)	n.s.	-	-	
Surgery	3.3(1.4)	3.4(1.4)	n.s.	3.5(1.1)	3.1(1.3)	n.s.	-	-	
Test results	4.0(1.3)	3.8(1.3)	n.s.	4.2(1.1)	3.7(1.3)	n.s.	3.7(1.5)	3.9(1.2)	n.s.
Total	9.6(3.2)	9.9(3.5)	n.s.	10.4(2.9)	9.4(3.1)	n.s.	-	-	
Information seeking									
Information read	3.3(0.5)	3.3(0.6)	n.s.	-	-		-	-	
Internet acces	90%	94.1%	n.s.	-	-		-	-	
Internet use	2.9(1.7)	2.7(1.8)	n.s.	-	-		-	-	
Additional information	55%	64.7%	n.s.	-	-		41.2%	42.9%	
Sources	1.9(1.0)	1.9(0.5)	n.s.	-	-		2.4(1.7)	1.5(0.5)	n.s.
Subjects	4.8(2.4)	4.4(2.0)	n.s.	-	-		2.7(1.9)	4.7(2.5)	n.s.
Satisfaction									
Care									
Medical care	8.0(0.9)	8.4(0.9)	n.s.	8.0(0.7)	8.6(0.9)	0.02	7.6(0.8)	8.2(0.8)	0.04
Mammacare centre	8.5(1.0)	8.7(0.8)	n.s.	8.4(0.8)	8.6(0.9)	n.s.	8.2(0.8)	8.3(0.8)	n.s.
Satisfaction surgery	-	-		-	-		3.8(0.9)	3.9(0.9)	n.s.
Consultation									
Technical skills	-	-		11.2(2.1)	11.4(1.9)	n.s.	-	-	
Interpersonal skills	-	-		11.4(2.1)	11.4(2.0)	n.s.	-	-	
Information provision	-	-		11.4(2.1)	11.5(2.0)	n.s.	-	-	
Availibility	-	-		4.0(0.6)	4.0(0.8)	n.s.	-	-	
Total	-	-		38.3(6.1)	38.6(6.3)	n.s.	-	-	
Score	-	-		8.3(0.9)	8.6(1.0)	n.s.	-	-	
Preoperative info provision									
Understanding	-	-		-	-		4.1(0.5)	4.2(0.6)	n.s.
Met up to expectations	-	-		-	-		3.5(0.8)	3.6(0.8)	n.s.
Agreement reality	-	-		-	-		3.8(0.6)	4.2(0.6)	n.s.
Information missed	-	-		-	-				
Yes	-	-		-	-		23.5%	7.1%	
No	-	-		-	-		76.5%	92.9%	
Knowledge									
General	3.6(0.8)	3.8(0.8)	n.s.	4.3(0.9)	3.9(0.6)	n.s.	-	-	
Surgery	4.4(1.0)	4.0(1.0)	n.s.	4.6(0.6)	4.4(0.8)	n.s.	-	-	
Total	8.0(1.5)	7.8(1.2)	n.s.	8.8(1.0)	8.3(1.0)	n.s.	-	-	
Anxiety & Depression									
Anxiety	8.9(5.0)	8.7(4.4)	n.s.	8.1(5.5)	7.7(4.0)	n.s.	5.3(4.6)	5.6(3.4)	n.s.
Depression	5.8(4.5)	4.6(3.6)	n.s.	5.1(4.7)	4.8(3.4)	n.s.	3.2(3.6)	4.0(3.6)	n.s.
Total	15.1(9.1)	13.3(6.8)	n.s.	13.1(10.0)	12.5(6.5)	n.s.	8.5(7.8)	9.6(6.6)	n.s.
Preoperative Anxiety									
Anesthesia	4.6(2.2)	5.3(3.1)	n.s.	5.1(2.2)	5.2(2.8)	n.s.	-	-	
Surgery	6.0(2.1)	5.6(2.1)	n.s.	6.1(2.1)	5.5(2.0)	n.s.	-	-	
Test results	7.1(2.5)	6.8(2.1)	n.s.	7.6(2.1)	6.5(2.4)	n.s.	7.3(1.6)	5.8(1.7)	0.02
Total	17.6(5.4)	17.7(5.8)	n.s.	18.7(5.4)	17.2(6.1)	n.s.	-	-	
Perceived Control									
Emotion/symptom	-	-		6.1(1.2)	6.5(1.1)	n.s.	6.3(1.0)	6.6(1.2)	n.s.
Relation	-	-		10.4(1.7)	10.7(1.9)	n.s.	10.9(1.5)	10.7(1.4)	n.s.
Medical care	-	-		5.7(1.1)	6.2(1.1)	n.s.	6.2(1.4)	6.6(1.1)	n.s.
Progression of disease	-	-		2.5(1.0)	3.1(0.7)	n.s.	2.9(0.9)	3.1(0.7)	n.s.
Overall	-	-		3.2(0.6)	3.5(0.6)	n.s.	3.1(0.6)	3.4(0.7)	n.s.
Total	-	-		28.3(3.7)	30.0(4.8)	n.s.	29.3(4.8)	30.8(4.6)	n.s.

[1] = *P*-value based on t-test

5. Discussion

5.1. Discussion

Aim of this study was to investigate how newly diagnosed breast cancer patients experience preoperative mamma care from breast cancer diagnosis to preoperative consultation and surgery and to explore related informational needs and information seeking, patient satisfaction, knowledge, psychological distress, preoperative anxiety and perceived control. Moreover, the effect of a monitoring and blunting coping style in receiving preoperative patient education was explored.

5.1.1. Breast cancer patients

All patients were highly satisfied with the preoperative consultation, with medical care and with mamma care, all receiving a mean score of eight out of ten. Considering high monitors as more demanding patients and more likely to report low satisfaction with the care they receive (Miller, 1995; Ong et al, 1999; Sheehan et al., 2007) this finding is rather surprising. Also no differences appeared on satisfaction with information provision, as have been found by Steptoe et al. (1991); Nordin et al. (2002) and Timmermans et al. (2007). The additional information high monitors obtained after diagnosis and before their preoperative consultation, may have led to better satisfaction with the information provided during the preoperative consultation. With regard to the other outcome measures addressed in this study, factual knowledge significantly increased from T1 to T2. Not surprisingly, the same is true for levels of anxiety and depression, being highest after diagnoses and lowest after surgery. For preoperative information needs, preoperative anxiety and perceived control no changes were found during preoperative care.

5.1.2. Monitoring and blunting

Considering high and low monitors and high and low blunters, most expected differences between these groups have been confirmed, but were rather small and insignificant. High monitors proved to be younger and higher educated compared to low monitors and had higher knowledge levels about breast cancer and surgery. Not surprisingly, high monitors were more active information seekers and had higher informational needs. Moreover, all significant correlations between the monitoring scale and outcome measures were found on information related variables, with high monitors desiring more preoperative information and seeking for more additional information subjects. These findings emphasizes the importance of information for high monitors. Unexpected, however, differences in information needs between high and low blunters were inconsistent and low. Furthermore, regarding additional information seeking more than half of the low monitors and high and low blunters searched for information after receiving diagnosis. An explanation of this finding can be found in the sample. As Eheman (2009) identified breast cancer patients as most active information seekers compared to other cancer patients, this may have obscured differences between high and low monitors and high and low blunters.

Previous research suggested that in situations that are out of the individual’s control, such as undergoing essential cancer surgery, high monitors experience more distress than low monitors. Congruent with these studies (Miller, 1987; Miller, 1995; Miller, Shoda, Hurley, 1996; Lehrman et al., 1996; Van der Zee et al., 2002;Van Zuuren et al., 2006; Shiloh et al., 2008) high monitors indeed proved to have higher anxiety and depression scores and higher preoperative anxiety scores in the present study. High blunters experienced less distress, as expected, but showed higher anxiety and depression scores after surgery. However, this finding does not correspond with anxiety about test results, which was significantly lower in high blunters. Similar to findings of Nordin et al. (2002), monitoring was positively correlated with HADS-scores, in contrast to negative correlations for blunting. Higher monitoring scores are therefore related to higher distress in patients, whereas higher blunting scores are related to lower distress in patients. The correlations found were however insignificant and rather weak. Optimism may have played an influencing role. Andrykowski et al. (2002) found for example that monitoring coping style was much less strongly associated with breast cancer-specific distress when optimism was high. This might have been true as all breast patients in this sample were treated for curable cancer and can be found in specific HADS-scores. Mean anxiety scores for monitors ranged from 8 to 10 at T1 an T2 and from 5-6 at T3 and for blunters from 7-9 and 5-6 respectively. Depression scores ranged from 3-6 for both monitoring and blunting. As Zigmund and Snaith defined, scores less than eight on either subscale are considered to be non-cases, score between eight and ten, borderline cases and scores greater than ten are indicative of the presence of psychological distress (Sellick & Edwardson, 2007). Therefore psychological distress wasn’t found in both monitors and blunters.

To our knowledge, this study was the first to address the relationship between monitoring, blunting and perceived control. Since Beckjord et al.(2009) showed that their perceived control dimensions were significantly positively correlated with engagement coping, it was expected this might be the same for monitoring coping style. From our data it appeared however that monitoring was not related to feelings perceived control. On the contrary, blunting scores were positively correlated to perceived control dimensions, that even reached significance for emotion/symptom control at T3, medical care control at T2 and nearly at T3, overall perceived control at T2 and T3 and also for total perceived control at T2 and T3. Patients with higher blunting scores, therefore experience higher perceived control.

To conclude, this study confirms previous findings of monitoring being the strongest scale as internal consistency, explained variance and correlations with outcome measures were higher in the monitoring scale (Van Zuuren et al., 1996; Van Zuuren et al., 1999; Ong et al, 1999; Rees & Bath, 2001; Bijttebier et al., 2001). As mentioned before, this could be due to the fact that half of the blunting items refer to 'having an optimistic viewpoint', while the others refer to ‘seeking distraction from the situation’. None of the blunting items explicitly concern avoidance of information. All monitoring items, on the other hand, refer to 'seeking information about the situation' (Van Zuuren et al.,1996), making it a more homogeneous concept than blunting. Especially with regard to information provision to patients, using only the monitoring scale to divide patients in either high or low monitors seems therefore appropriate (Ong et al., 1999; Rees & Bath, 2000; Bijttebier et al., 2001; Sheehan et al. 2007; Shiloh et al., 2008).

5.2. Limitations

One major limitation of this study are the small sample sizes, which hindered making strong comparisons between high and low monitors and high and low blunters. Differences between these groups were noticeable, but mostly failed to reach significance. Correlations found on both scales were therefore all moderate to small. Secondly, because patients participated voluntarily, bias in the study sample may have occurred with respect to satisfaction, anxiety, depression and control. Patients who participated may have been more optimistic, less anxious and more willing to consider the situation they find themselves in. Anxious patients who are distracting themselves from their situation may have indicated directly are after receiving the first questionnaire not wanting to participate. Thirdly, questionnaires were administered at home, to guarantee patients would be at ease. The adverse effect is lack of control on influencing factors. A final limitation can be found in differences between mamma-care nurses in providing preoperative patient education. However, for this study mamma-care nurses were similarly briefed on the procedure followed and provided with a checklist to reduce bias in patient responses. No large differences have found in judgments or satisfaction with the preoperative consultation.

5.3. Conclusion

The most important outcome of this study regarding preoperative information provision in breast cancer patients are the differences found in “preoperative informational needs” and “additional information seeking”. High monitors proved to have the highest preoperative information needs and are the most active additional information seekers compared to low monitors and high and low blunters. This emphasizes that when providing patients with preoperative information, individual differences have to be considered and anticipated on, as information provision is suggested to be related to important outcome measures “patient satisfaction”, “knowledge”, “psychological distress”, “preoperative anxiety” and “perceived control”, addressed in this study. As the TMSI monitoring scale showed to be stronger and fully refers to information needs and information seeking it seems to be appropriate to only use this scale for dividing patients into two informational groups, either receiving basic information (low monitors) or extensive and detailed information (high monitors). Because strong implications can’t be drawn from this study regarding information provision in surgical breast cancer patients, future decisions on information provision with respect to coping style should be made carefully.

5.4. Practice implications

Since previous coping style literature and outcomes of the present study emphasizes the importance of preoperative information for high monitors compared to low monitors and high and low blunters, health professionals should be sensitive to individual differences when providing preoperative information to patients and cancer patients in particular. Future possibilities to address these differences in preoperative mamma care will be discussed below.

5.4.1. Tailoring information to coping style

Miller (1995) suggested that information provision concerning a medical threat must be consistent with the individual coping style, while not all patients benefit from the same kind of informational preparation before medical procedures. According to Miller (1988; 1995) patients seem to be better off both psychologically, behaviorally, and physically when the information corresponds to their own coping style. Patients with a monitoring coping style manage the medical situation better with more information, whereas blunting patients manage better with less information. Therefore, matching the amount of information to the patients coping style is argued to be beneficial for reducing their level of stress. Because blunters are considered to prefer dealing with a stressful situation by not dealing with it, less threat-relevant information will reduce their stress-levels while increased information forces them to face the situation, which will lead to higher stress levels. The opposite applies to monitors. A high amount of information helps monitors to oversee and process their situation (Miller, 1995). This indicates it would be reasonable to match the amount of information to the patients coping style, giving monitors more and blunters less.

In several medical contexts, patients have found to benefit from information that is tailored to their cognitive coping styles: high monitors are less anxious if they receive detailed, but reassuring, information about their situation while high blunters are content with only basic medical information.
(Miller, Brody, Summerton, 1988; Miller & Mangan, 1983; Williams-Piehota et al., 2005; Van Zuuren et al., 2006; Timmermans et al., 2007). However, when information provision is mismatched and high blunters and low monitors receiving extensive, this could be counterproductive and lead to more distress (Miller & Mangan, 1983; Gattuso, Litt & Fitzgerald, 1992). Van der Zee et al. (2002) en Van Zuuren et al. (2006) supported these results but did not find negative effects in high blunters and low monitors receiving extensive information. This may however be due to the less compelling nature of the flyer used to differentiate in information provision, in contrast to Miller and Mangan (1983) who used both verbal and visual information in a well-structured setting that was not easily to escape from.

Moreover, with regard to the cancer-context, which coincides with levels of high threat, carefulness is required. Low monitors would likely benefit from a only the necessary information presented in an easy-to-read format (Sheenan et al., 2007). According to Miller, Shoda & Hurley (1996) the information presented to high monitors should be highly detailed and accurate but framed less negatively, in a manner that distances it, so their sense of vulnerability and distress does not panic them. More neutral message appear to reduce their level of distress, without compromising their need to retain, or act on, relevant information (Miller et al., 1999). Also, enhancing an optimistic view among high monitors is suggested to be important because monitoring coping style was found much less strongly associated with breast cancer-specific distress when optimism was high (Andrykowski et al., 2002). Additionally, high monitors may require not only more information, but also emotional support to help them process the information they receive and cope with their disease (Miller, 1995).

5.4.2. Use of the web-application

Against this background it seems promising to attune the information provided during the preparative consultation with the mamma-care nurse to coping style, by means of the web-application discussed before. Using this web-application will provide patients with basic and necessary information they need to know before surgery and secures unequivocal and complete patient education. By providing more detailed information and allowing user-control to access this extra information, the web-application can be tailored to a patient’s coping style.

Question remains however how to implement this in mamma care practice. Taking into account that mismatching the amount of information given to a patient might be counterproductive, it doesn’t seem to be appropriate to leave this decision to the mamma care nurse. Moreover, having to administer the TMSI to identify coping style in patients before tailoring information provision, might take up precious time and be a burden to patients. Furthermore, the present study reveals that many patients seek for additional information directly after they have received their diagnoses and thus before receiving their preoperative consultation. Especially high monitors have found to prefer to be informed at an early stage so they have the opportunity to review the information and prepare themselves (Miller et al.,1996; Ong et al., 1999; van Zuuren et al., 2006). The present study showed however that both high and low monitors as high and low blunters were seeking for additional information at an early stage in preoperative care. Providing patients with essential information during the preoperative consultation might therefore be too late. In addition, for patients seeking additional information, the internet was (next to friends or family) the main information source. The search for information on the internet about cancer diagnosis and treatment can be confusing because of the large amount of (complicated) information available, difficulty in navigating websites or difficulty in assessing the quality of websites, the accuracy of information provided and if the information is applicable to them (Clayman, Boberg & Makoul, 2008).

Initially the web-application would be used during the preoperative education consult in a supportive way and be operated by the mamma-care nurse. In this way basic information on procedures and surgery would be given by means of the web-application, while patient questions and other subjects like complications or prostheses would be discussed personally by the mamma-care nurse. After preoperative consultation however, patients would receive access to the web-application on the internet, making it possible for them to watch animation again at home.

However, to address the concerns outlined above, it seems to be promising to offer the opportunity to access the web-application online directly after patients received their diagnosis and treatment plan. This seems viable as more than 90 percent of the patients indicated having internet access. In this way patients who want to know more about their surgery can directly access all the basic information they need to know, with the possibility to access the detailed information section as they wish. This might be particularly true for high monitors. In this way additional information seeking behavior of patients can be facilitated, leading them to reliable information, attuned to their personal situation (i.e. type of surgery) and with respect to their individual coping style as patients can decide for themselves whether they only want to know the basics or desire more detailed information. Patients who desire even more information, can be referred to other reliable websites (Clayman et al. 2008). The web-application should, however, still be used during the preoperative consultation, to ensure that all patients receive the essential information, including strong information avoiders. Remaining consultation time can be used for personal questions, elaborating on specific subjects, discuss additional subjects or providing emotional support. This may all be particularly important for high monitors as they desire detailed information and also proved to experience higher levels of anxiety and depression.

5.5. Additional research

Before implementing the animated web-application in preoperative mamma care and make the animation accessible on the internet, satisfaction with the web-application and the effect of this application on the outcome measures addressed in this study should be investigated. An additional study will therefore be performed using this web-application during the preoperative consultation and compare outcomes to the conventional oral consultation as has been investigated in this study.

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