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Anxiety and Overall Patient Satisfaction in Cataract Patients: Reducing the Impact of Anxiety

by Special Adjustments of Care Delivery.

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Abstract

The purpose of this study was to identify the impact of personal and situational factors on anxiety and to evaluate adjustments of care delivery used to reduce the impact of anxiety. Moreover, the influence of anxiety on overall patient satisfaction was investigated. Cataract patients ($N = 140$) at The Rotterdam Eye Hospital filled out two questionnaires. Correlations, t-tests and multiple regression analysis were used to analyze the data. State anxiety was negatively related with overall patient satisfaction. In the present study it was shown that this negative role of state anxiety can be decreased, by implementing special adjustments of care delivery. Thus, health care organizations are able to decrease anxiety and increase patient satisfaction by adapting organizational processes, using a more patient-centred focus.

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Cataract is one of the most frequently experienced diseases among seniors, but effective therapy is available. Most cataract surgeries are performed in day-care setting and most patients are women (63 percent). Eighty-five percent of the population who underwent cataract surgery is 65 years and older (Staaroperaties in Nederland, 2007).

An unpleasant surgery may cause anxiety because of the concern about pain people expect to feel and one can be concerned about the diagnosis and prognosis (Edelmann, 1992). Moreover, anxiety can lead to an increased experience of stress in patients before they undergo cataract surgery (Kim, Cho, Woo, & Kim, 2001). Marback (2007), indicated that 33.3 percent of the patients feared the surgical procedure, 54.0 percent was afraid for visual loss and 12.7 percent was even scared for death during surgery.

In general, it has been suggested that there is improvement in technique and knowledge of diseases in health care. However, not much has changed in business and management systems since the 1950s (Kaplan, & Patterson, 2008). Focus on innovations in health care can increase patient satisfaction (McKay, 2008). It is suggested that patient satisfaction is an important goal of healthcare services (Karthikeyan, Dahlmann-Noor, Gupta, & Vivian, 2007).

Very little empirical information is available about the influence of anxiety on overall patient satisfaction. In this study, the impact of different determinants of anxiety were investigated as well as the influence of anxiety on patient satisfaction. Moreover, the adjustments of care delivery made by some hospitals to reduce the impact of determinants of anxiety and to increase patient satisfaction were evaluated. The research question is: What are the effects of special adjustments of care delivery to reduce the impact of anxiety and what is the influence of anxiety on overall patient satisfaction of

patients undergoing cataract surgery?

Results of this current study will provide recommendations on how to reduce anxiety within patients that undergo cataract surgery. If anxiety proves to have an influence on overall patient satisfaction, it's important to know which determinants of anxiety have a significant influence. This study aims to provide a clear insight into the link between anxiety and patient satisfaction and may provide policymakers with relevant information to further improve organizational processes from patients' perspective.

The next section of the introduction addresses the definition of anxiety and previous research in this area. Furthermore, the theoretical framework used in the present study will be explained. Moreover, what is known about factors contributing to anxiety reduction, health care innovation and overall patient satisfaction from previous research will be discussed. A last section, which concludes the introduction, addresses how these distinct definitions were integrated to shed light on the role of anxiety in patient satisfaction.

Anxiety & Cataract

Anxiety is widely used within the psychological literature and can be defined as the tense anticipation of a threatening and vague event; it's a feeling of uneasy suspense (Rachman, 1998). "An adequate theory of anxiety must distinguish conceptually and operationally between anxiety as a transitory state and as a relatively stable personality trait" (Spielberger, 1972, p.38). State anxiety is an emotional state, while trait anxiety indicates individual differences in anxiety proneness (Edelmann, 1992). Trait anxiety can be defined as a relatively enduring individual difference between people in how they perceive the world and respond to it. State anxiety on the other hand can best be described as transitory, because it is caused by threatening stimuli and will last for a limited period. As soon as the threat is removed anxiety will decrease. It is stated that state anxiety is influenced by differences in

already existing anxiety proneness, better known as trait anxiety (Rachman, 1998). Research has suggested that there is a high correlation between state anxiety and trait anxiety (Nijkamp et al., 2004).

Nijkamp et al. (2002a) determined factors that were related to anxiety among patients who needed cataract surgery. These determinants were split into personal and situational factors. Personal factors included (anticipation) of sensations, previous experience and coping strategies. Situational factors were the doctor-patient relationship, patient education, social support, waiting, and the hospital organization.

Nijkamp et al. (2002a) developed a model regarding these factors and based their research model on the cognitive appraisal theory of Cohen and Lazarus. Cohen and Lazarus developed a theory in which they made a distinction between primary and secondary appraisals. The primary appraisal process is an individual evaluation about the personal relevance and negative consequences of a threat. On the other hand, the secondary appraisal process is a personal judgment about the person's ability to cope with the perceived threat (Cohen & Lazarus, in Nijkamp et al., 2002a).

The type of appraisals people make are influenced by personal (e.g. coping strategies) and situational factors (e.g. hospital organization) (Lazarus, in Nijkamp et al., 2002a). From their study, Nijkamp et al. (2002a) concluded that personal factors as well as situational factors were related to anxiety in patients who needed to undergo cataract surgery.

In another study, Nijkamp et al. (2004) further examined factors related to induced anxiety in patients undergoing cataract surgery. A model of anxiety related factors, which consisted of personal and situational factors was used. Nijkamp et al. (2004) concluded that gender and trait anxiety correlated significantly with state anxiety. It was indicated that individuals with higher trait anxiety levels and women showed more state anxiety.

Furthermore, positive outcome expectancies and social support correlated with state anxiety.

Level of anxiety was the highest before surgery, after surgery it declined immediately, anxiety was higher again after the postoperative visit.

In summary, studies conducted by Nijkamp et al. (2002a, 2004) showed that gender, trait anxiety, outcome expectancy and social support correlated significantly with state anxiety. Furthermore, Nijkamp et al. (2002a, 2004) have shown that it is important to understand personal and situational factors related to anxiety, in order to successfully implement anxiety reducing interventions. The present study was build on the cognitive appraisal theory and the findings by Nijkamp and colleagues (Nijkamp et al. 2002a, 2004).

To further extend these previous studies, in the present study possible determinants of state anxiety were added. Furthermore, the relationship between anxiety and overall patient satisfaction was investigated (see Figure 1). The research model will be explained in the last section of the introduction. In the next section, the theoretical framework used for this study will be discussed.

Cognitive Appraisal Theory

It depends on patients' perceptions and emotional reactivity if a stressful situation causes anxiety (Carlson, & Buskist, 1997). The cognitive processes of people (thoughts, attitudes, beliefs, images) should play an important role in whether people experience a situation as stressful (Lazarus, in Lazarus, & Folkman, 1984). Cognitive appraisal can be defined as a process through which a person evaluates whether a potentially stressful situation is relevant to his or her well-being and, if so, in what way (Folkman, Lazarus, Gruen, & DeLongis, 1986b).

According to Lazarus and Folkman (1984) cognitive appraisal, or perception, is a two-stage process. In the first stage ('primary appraisal') a person considers whether the situations is perceived as threatening with regard to the own well-being. For example, is there potential harm or benefit to my health or well-being? If a person judges a situation as threatening, in the second stage ('secondary

appraisal') a person assesses the availability of the resources necessary to cope adequately with the stressful situation. Folkman et al. (1986b) indicated that people evaluate different coping strategies such as an attempt to change the situation, accept the situation or seek more information.

How much stress or anxiety is experienced depends on the interaction between the interpretation of the situation ('primary appraisal') and the interpretation of coping possibilities ('secondary appraisal') (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986a). Appraising a situation as primarily threatening leads to more inadequate psychological reactions, such as containing the possibility of harm or loss, than when appraising a situation as challenging and holding the possibility of mastery or benefit (Folkman et al., 1986a; Tomaka, Blascovich, Kibler, & Ernst, 1997).

Cognitive appraisal is the process that people use to evaluate whether a situation is stressful (Lazarus, & Folkman, 1984). Thus, stressful situations that are appraised as positive, will result in reduced perceived stress. Altering peoples' perceptions of a stressful situation can reduce stress (Carlson, & Buskist, 1997). This coping strategy is called cognitive *re*appraisal and this is an extension of Lazarus and Folkman's (1984) idea of cognitive appraisal. Reappraisal can be defined as changing an appraisal based on new input received about a stressful situation (Lazarus, & Folkman, 1984).

According to Lazarus (1991) other people cannot directly change a persons' perception of a situation, but they can facilitate the person's own reappraisal of the situation. Similarly, health care organizations can facilitate patients in reappraising the situation as less threatening. This can be done by different factors that contribute to anxiety reduction. In the next section, examples of health care innovations will be given and factors contributing to anxiety reduction will be discussed.

Health care innovation

At the present time, innovation and quality are of a growing importance. According to Schrijvers, Oudendijk, and De Vries (2003, p.2) "health care innovation is a change in the delivery of care,

consciously chosen by existing organisations with the object of improving the performance of care delivery."

The use of Toyota Production Systems in health care to improve quality and safety indicates the current interest of quality improvement programs (Kaplan, & Patterson, 2008). Another example of an innovation in the health care industry is the use of Crew Resource Management (CRM) learned from the aviation industry. CRM is a management system which makes optimum use of equipment, procedures and people in order to promote safety and enhance efficiency (Powell, & Hill, 2006).

Factors contributing to anxiety reduction

Nijkamp et al. (2004) indicated that organizational processes of some hospitals are focused on reduction of anxiety in patients undergoing cataract surgery. From the patients' perspective, the cataract surgery procedure as such is only a part of the overall cataract treatment process. The patient satisfaction is the sum of the contribution of all persons involved in this overall cataract treatment process. According to Hiddema, De Korne, Sol, Vingerhoets, and Smolderen (2007) the major factors influencing patient satisfaction of treatment can be summarised into: information supply, being accompanied by a family member or companion and transparency and openness.

Information supply. In his study Pager (2005) showed that a simple, inexpensive videotape for patients in which is explained what to expect from cataract surgery leads to positive outcomes. He demonstrated that a videotape will increase patient satisfaction with the cataract surgery and furthermore will lead to a decrease in anxiety. These effects of informing patients by videotape had nothing to do with patients' expected outcomes or past experiences with cataract surgery. Although patients generally indicated that they had already enough information, the videotape led to increased patient satisfaction and decreased anxiety levels of patients. Gillies and Baldwin (2001) also examined a desire amongst patients to receive enough information.

However, providing information doesn't always reduce anxiety in patients. The negative effect of information supply was already found by Langer, Janis, and Wolfer in 1975. Specific information about the pre- and postoperative procedure caused an increase in anxiety for the upcoming surgery. Patients were more focused on the possible pains and discomforts because of the provided specific information about the surgery. Stoddard, White, Covino, and Strauss (2005) indicated that most studies that measure the impact of information on anxiety reduction did not measure whether patients experienced the information as clear. The actual understanding of information by patients may influence the link between information and anxiety. Another tool to reduce anxiety by providing information to patients, is the appearance of a video screen on which the patient and family member can watch the whole cataract surgery. This causes transparency and might reduce anxiety.

Outcome expectancy. In general, to decrease anxiety, more attention should be paid to positive outcome expectancies of patients. It is proven that positive outcome expectancies reduce state anxiety (Nijkamp et al., 2004). Different expectations before surgery are a reason why some patients are more satisfied than others. It has been proposed that satisfaction is also influenced by patients' expectations of treatment quality (Strasser, Schweikhart, Welch, & Burge, 1995). Moreover, Jackson, Chamberlin, and Kroenke (2001) found that unmet expectations significantly decreased patient satisfaction.

Social support. Nijkamp et al. (2004) defined social support as another important determinant of anxiety of patients undergoing cataract surgery. Similarly, Koivula, Paunonen-Ilmonen, Tarkka, Tarkka, and Laippala (2002) found that heart patients who received low emotional support from their social network experienced higher levels of anxiety. At some hospitals it is therefore strongly recommended to be accompanied by a family member or companion during visits at the hospital. The benefits of this tool are clear: patients feel supported and besides that, information is received by two persons instead of one.

Hospital design. The focus on reduction of anxiety can also influence the health care environment (Ulrich, 1992). Hiddema et al. (2007) indicated that use of natural materials, innovation and transparency may create a non-typical hospital ambiance. Together all these adjustments of care delivery are supposed to decrease anxiety and increase overall patient satisfaction.

Overall patient satisfaction

Overall patient satisfaction is about meeting or exceeding patient's own expectancies for treatment and care (Trout, Magnusson, & Hedges, 2000). Patient satisfaction depends on how well a service was completed, however for a patient it's not about how technically well the service or clinical element was delivered. Although clinical excellence has a contribution to overall patient satisfaction, patients rate the overall experience of a health care visit as more important than the particular medical outcome (Chilgren, 2008).

Nijkamp, Nuijts, Van den Borne, Webers, Van der Horst, and Hendrikse (2000) also found that perceived quality of hospital care was stronger correlated with overall satisfaction than the satisfaction of the patient regarding the medical outcome. This means that the experienced quality of care has a stronger influence on overall patient satisfaction, than the actual medical outcome.

Although the actual medical result doesn't seem to have a significant influence on overall patient satisfaction, Krummenauer, Lohmeier, and Dick (2003) found that overall assessment of patient satisfaction is not enough to measure the subjective evaluation of a cataract surgery. Besides the overall assessment of patient satisfaction it seems necessary to evaluate how people perceive their quality of life, because it might influence overall patient satisfaction.

At present, it is generally agreed that current medical outcomes of cataract surgery are good; for that reason there should be a focus on quality improvement in patient education and counselling (Nijkamp et al., 2000). These days, customer service should be one of the most important goals in the

health care process. It is suggested that there is a significant shortcome of data correlating quality of care and patient satisfaction (Vukmir, 2006).

In summary, substantial research has been focused on determining determinants of anxiety and measuring overall patient satisfaction. However, very little empirical information is known about the relationship between these two variables. Gardner, Nnadozie, Davis, and Kirk (2005) analyzed patient anxiety and patient satisfaction in hospital-based and freestanding ambulatory surgery centres, but did not determine the relationship between anxiety and patient satisfaction.

It is important to understand the factors that influence patient satisfaction, because managing these factors will contribute to a subjective quality improvement in cataract surgery (Fung, Cohen, Stewart, & Davies, 2005). When a hospital focuses on quality improvement, one will see not only an increased patient satisfaction and more satisfied staff, but one can also expect a substantial return on investment (Chilgren, 2008).

Research model and hypotheses of the present study

In the present study, determinants of anxiety were investigated and the influence of anxiety on overall patient satisfaction of patients undergoing cataract surgery as well. A mediation model of patient satisfaction was developed to describe predicted relations between the different variables (see Figure 1).

The type of appraisals people make about a stressful situation are influenced by personal and situational factors (Lazarus, in Nijkamp et al., 2002a). For that reason, the different determinants were divided into personal factors (gender, trait anxiety, perceived Health Related Quality Of Life) and situational factors (outcome expectancy, social support, perceived quality of care, information supply and hospital design). These determinants may correlate significantly with anxiety. Anxiety, in turn, may influence overall patient satisfaction.

The purpose of this study was to identify the impact of the various determinants of anxiety and to evaluate different adjustments of care delivery used to reduce the impact of anxiety. Different adjustments of care delivery are situational factors that can facilitate patients in reappraising the cataract surgery as less threatening. Moreover, the link between anxiety and overall patient satisfaction was investigated in the present study. To answer the research question six hypotheses were tested:

1) A decrease in state anxiety levels before and after cataract surgery is expected.

2) Women and people high on trait anxiety will experience more state anxiety, whereas Health Related Quality Of Life (HRQOL) is expected to be negatively related with state anxiety.

3) A negative relationship between outcome expectancy, social support, perceived quality of care, information supply, hospital design and state anxiety is expected.

4) A positive relationship between outcome expectancy, social support, perceived quality of care, information supply, hospital design and overall patient satisfaction is expected.

5) It is expected that state anxiety negatively relates with overall patient satisfaction.

6) The effect of state anxiety on overall patient satisfaction will decrease when implementing special adjustments of care delivery.

Method

Participants

The sample compromised patients scheduled for day care cataract surgery of the first eye at the cataract unit of The Rotterdam Eye Hospital. The formula for calculating sample size requirements of Tabachnick, & Fidell (in Pallant, 2001) was used: $N > 50 + 8m$, where m indicates number of independent variables. According to this formula, N is at least 114. This study has been approved by the Institutional Review Board (IRB) of the hospital and was carried out among 140 cataract patients.

The following inclusion criteria were used: individuals of both sexes, patients diagnosed with

cataract from the age of 55 to 95 year that did not participate in another Consumer Quality Index Cataract Questionnaire (CQI Cataract) during the last twelve months.

Patients who were not able to understand and answer the questions in Dutch were not allowed to participate in this study. Because of sickness or aging some patients were not able to answer the questions themselves. For that reason it was allowed to receive assistance in answering the questions from a family member or acquaintance.

Cataract patients (N = 140) from The Rotterdam Eye Hospital all returned the first questionnaire at t1. At t2, 38 patients became lost to follow-up during the study, because they did not undergo cataract surgery (n = 23) and because they were not reachable during the study period (n = 15), which gave a response rate of 73%. The final sample consisted of 102 individuals of both sexes (44.1% men; 55.9% women), between the ages of 35 and 80 years or older.

Concerning education level, 3.6% had never attended school, 68.6% had low or medium education level and 19.3% had attended higher education or university. Some participants (26.4%) received assistance in answering the questions at t1 from a family member or acquaintance. Most of the participants (85.7%) were native Dutch and 95% spoke Dutch at home.

Surgical technique

At The Rotterdam Eye Hospital, a standard phacoemulsification with monofocal intraocular lens implementation was performed. The cataract surgery was done under local anaesthetic, using retrobulbar anaesthesia. This is an injection behind the eye which produces sensory denervation of the eye.

Procedure

The study was explained to potential participants before their surgery at The Rotterdam Eye Hospital. Patients were asked to participate after their 'intake and screening' visit. Informed consent

consisted of a cover letter given to each participant in which the purpose of the research study was explained. Moreover, patients were assured of the confidentiality of their responses.

The first questionnaire was administered by the investigator between one and six weeks <u>before</u> cataract surgery (t1). State anxiety as well as trait anxiety were measured at t1. Moreover, the independent variables gender and outcome expectancy were measured between one and six weeks before cataract surgery (t1).

The second questionnaire was handed out after patients' 'intake and screening' visit at The Rotterdam Eye Hospital. Patients were requested to complete the second questionnaire between one and two weeks <u>after</u> cataract surgery (t2). They could either send it back or bring it with them to the control meeting. The second questionnaire was the CQI Cataract questionnaire which consists of questions about perceived quality of care, perceived health related quality of life (HRQOL), information supply and overall patient satisfaction. Besides this, patients were also requested to fill out questions about social support and state anxiety. In contrast with t1, only state anxiety was measured at t2, because trait anxiety is supposed to stay unchanged over time (Spielberger, Gorsuch, & Lushene, 1970).

At t2 patients answered a few additional questions about the specific adjustments of care delivery at The Rotterdam Eye Hospital. The Appendix contains information about these self-developed scales. Lastly, patients had to indicate what they experienced as most anxiety arousing and reassuring in the overall cataract treatment process.

Measures

Demographic variables. Questions about age, gender, highest level of education, country of birth, country of birth father and mother and main language spoken at home, were asked. Furthermore, patients had to indicate if they received help by filling in the questionnaire and in what way. At least

font size 14 was used for all questionnaires.

Anxiety. This was measured using the shortened Dutch version of the State-Trait Anxiety Inventory (STAI), developed by Marteau and Bekker (1992). The STAI is widely used because it is the only inventory that includes trait and state anxiety. In general, the STAI can be seen as the most carefully developed instrument that has appeared so far (Levitt, 1980).

The shortened Dutch version of the STAI by Marteau and Bekker (1992) consisted of six items measuring trait anxiety as well as six items measuring state anxiety. Egan, Miller, & McLellan (1998), found a correlation of 0.96 between the six item state anxiety scale and the complete state anxiety scale (which consists of twenty items). Some examples of trait anxiety items are "In general, I am happy" and "In general, I feel safe." Cronbach's alpha for trait anxiety was 0.751. State anxiety items included "At the moment, I am calm" and "At the moment, I am afraid." Response options ranged from (1) 'no' to (4) 'yes'. Cronbach's alpha for state anxiety was 0.873 at t1 and 0.889 at t2.

Besides the six items that measured state anxiety, a Visual Analog Scale (VAS) was used to measure state anxiety. This psychological index is 10cm and is labelled (0) 'no anxiety' to (10) 'severe anxiety'. Answers were measured in millimetres. A single question with a 100mm VAS response scale assesses anxiety in a quick, adequate manner and is especially useful when it is required to measure anxiety more than once (Davey, Barratt, Butow, & Deeks, 2007).

Outcome expectancy. This variable was measured by a scale which consisted of three items. These items were used before by Nijkamp et al. (2004) and showed satisfactory internal consistency. The Cronbach alpha coefficient was 0.76. Sample items included "I think the operation will succeed" and "I think my vision will be improved after surgery." Response options ranged from (1) 'no' to (4) 'yes'. In the present study, the corrected item-total correlation of item 3 was 0.244. Correlation if item deleted was 0.627.

Social support. Four questions about company of a family member or companion during visits at the hospital were asked. Patients had to indicate whether they received the information that it is required to take a relative along. Moreover, questions were asked about whether patients experienced this as anxiety arousing or reassuring. Examples of questions were "Did you know that it is required to take a relative or acquaintance along during visits at the hospital?" and "Did you experience the company during hospital visits as reassuring?" Response options ranged from (1) 'no' to (4) 'yes' and (5) 'not applicable'. Cronbach's alpha was 0.910.

Another specific tool is the personal contact with the ophthalmologist who brings the patient to the surgery room and after the surgery back to the waiting room in person. Three questions were asked about this personal contact. Some examples of questions are: "Did you experience the personal contact with the ophthalmologist as reassuring?" and "Did you experience the personal contact with the ophthalmologist as anxiety arousing?" Response options ranged from (1) 'no' to (4) 'yes' and (5) 'not applicable'. Cronbach's alpha was 0.978.

Perceived quality of care. To measure experiences of patients after cataract surgery in this study, the Brouwer, Sixma, Triemstra, & Delnoij (2006) *Consumer Quality Index Cataract Questionnaire (CQI Cataract) version 2.0* was used. The CQI measures experiences of patients with quality aspects and the relative importance patients give to quality aspects. This questionnaire is a combination of different questionnaires among other things: the QUOTE Cataract, the CHAPS which stands for 'Consumer Assessment of Healthcare Providers and Systems' and SF-12.

The original QUOTE-Cataract was developed in response to the need of quality improvement. 'QUOTE stands for quality of care through the patients' eyes' (Nijkamp et al., 2002c, p. 1924). QUOTE-Cataract is an appropriate instrument to determine patient satisfaction after cataract surgery, because it has good reliability and validity (Nijkamp, et al. 2002b).

The CQI Cataract which was used in the current study is different compared to the previous mentioned QUOTE-Cataract in the use of the four point Likert-scale answering system. The reliability and validity of the CQI Cataract was recently published. All Cronbach's alpha coefficients were higher than 0.76, which indicated satisfactory internal consistency (Stubbe, Brouwer, & Delnoij, 2007).

A 14 item scale was used to measure 'total perceived quality of care'. Five questions were about the quality of treatment provided by ophthalmologists, while six questions were about information and communication given by the ophthalmologist. Three questions were about quality of treatment given by nurses (Brouwer, Sixma, Triemstra, & Delnoij, 2006). Examples of questions are "How often did your ophthalmologist treat you with respect?" and "How often did your ophthalmologist had sufficient time for you?" Response options ranged from (1) 'never' to (4) 'always'. In the present study Cronbach's alpha was 0.848.

Perceived Health Related Quality Of Life (HRQOL). 'Perceived Health Related Quality Of Life (HRQOL)' was measured with items from the SF-12. Underlying scales were: physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role and mental health (Gandek et al., 1998). The validity and usefulness of the SF-12 for patients with eye diseases was shown previously (Globe, Levin, Chang, Mackenzie, & Azen, 2002).

All twelve items of the SF-12 questionnaire were used. Some examples of questions are "In general, how should you rate your health?" and "In which way did you experience problems in your work or other activities because of emotional problems?" In the SF-12 questionnaire various response options were used. Cronbach's alpha was 0.893.

Information supply. To measure 'information supply' seven questions were asked about watching a video screen on the day of cataract surgery. Patients and their companion have the opportunity to watch a live surgery of a previous patient on a video screen. The aim of this video screen is to increase

transparency of the organization and to decrease anxiety in patients undergoing cataract surgery. Patients had to indicate whether they experienced watching the live-surgery on a video screen as anxiety arousing or reassuring and whether they found it anxiety arousing or reassuring that a family member or companion can watch their own live-surgery on the video screen. Moreover, to determine whether the video screen resulted in reduction of anxiety, patients were asked how long they watched the live-operation on the day of surgery and if they watched a live-operation before their own surgery.

Sample items included "Did you experience the video screen with live-operations on the day of your own cataract surgery as clear?" and "Did you experience the video screen with live-operations as reassuring?" Response options ranged from (1) 'no' to (4) 'yes' and (5) 'not applicable', except for the average time people watched the live-operation on the day of surgery. This average time was measured by a 10cm response scale that ranged from 'not at all' to 'all the time'. Cronbach's Alpha of the video screen scale was 0.960.

As in Nijkamp et al. (2004) an open-ended question about possible missing information was asked and if this was the case, which information was missing. At last, patients were asked to indicate whether they received too much information.

Hospital design. The Rotterdam Eye Hospital has a hospital design that is focused on reduction of anxiety. Nine questions were asked about the use of light, colours and art within the hospital. Sample items included "Did you experience the use of light within the hospital as reassuring?" and "Did you experience the use of art within the hospital as pleasant?" Response options ranged from (1) 'no' to (4) 'yes' and (5) 'not applicable'. Cronbach's alpha was 0.929.

Overall patient satisfaction. This variable was measured with four items from the CQI Cataract. Patients had to indicate on a scale from (0) 'bad hospital' to (10) 'perfect hospital'. Moreover, patients had to determine the experienced care of ophthalmologists on a scale from (0) 'bad care' to (10)

'perfect care'. Similarly, patients had to indicate the experienced care of nurses on a scale from (0) 'bad care' to (10) 'perfect care'. At last, patients where asked whether they would recommend this hospital to friends and family. The response option ranged from (1) 'definitely not' to (4) 'for sure'. The response options of this last question were transformed into 1 = 1; 2 = 4; 3 = 7 and 4 = 10. Cronbach's alpha was 0.839.

Data Analyses

To analyze and present the quantitative data, SPPS 16.0 was used. Data were handled as confidential. A subject identification code list was used to link the data to the subject. The code was not based on the patient initials and birth-date and the investigator safeguarded the key to the code.

In this study categorical data as well as continuous variables were used. The independent variables were: gender, trait anxiety, perceived HRQOL, outcome expectancy, social support, perceived quality of care, information supply and hospital design. Anxiety was identified as a mediator, or intervening variable, while overall patient satisfaction was the dependent variable.

Before any analyses started, data were checked for errors. Checking for errors was done for categorical variables and for continuous variables, furthermore errors that occurred were corrected in the data file (Pallant, 2001).

Descriptive statistics were used to organize and present research data (De Vocht, 2002). To gather descriptive statistics for the categorical variables, ´frequencies' was used within SPSS 16.0. In contrast with the categorical variables, for continuous variables mean, median and standard deviation were determined.

Before the statistical analyses were performed, negatively worded items were reversed and total scores for all scales were computed. For the self-developed scales (see Appendix) response option 5 ('not applicable') was transformed into 0. In this way, total scale scores were not influenced and power

was increased because of a larger sample size. For the data analysis, state anxiety was determined by calculating the mean state anxiety levels measured at t1 and t2. Reliability was assessed by calculating the Cronbach's Alpha value for each scale. For all statistical tests an alpha level of .05 was used.

Correlation analysis was used to explore the strength and direction of relationships between the different variables. Preliminary analyses were performed to ensure no assumptions were violated.

Paired-samples *t*-tests and independent-samples *t*-tests were used and before analyses were conducted, there was checked for the basic assumptions of *t*-tests (level of measurement, random sampling, independence of observations, normal distribution, homogeneity of variance). To test for Hypothesis 1, paired-samples *t*-tests were conducted to determine whether or not there was a significant change in state anxiety scores before cataract surgery (t1) and after cataract surgery (t2). Furthermore, as part of Hypothesis 2, an independent-samples *t*-test was conducted in order to test whether there was a statistically significant difference in the mean state anxiety scores for men and women (Pallant, 2001).

In general, in a mediation model, the effect of an independent variable (X) on a dependent variable (Y) is influenced through a proposed mediator (M). This means that X causes M and M causes Y (MacKinnon, & Fritz, 2007). In this study a mediation model was developed (see Figure 1) in order to indirectly assess the effect of proposed causes (A) on an outcome (C) through a third mediating, or intervening, variable (B).

MacKinnon, Lockwood, Hoffman, West, & Sheets (2002) identified 14 methods for testing mediation, which they broke down into three categories. A widely used method to test for mediation is the causal steps approach, developed by Baron and Kenny (1986). Baron and Kenny (1986) indicated that for testing the mediation model three regression equations should be estimated.

However, shortcomings of this causal steps approach have been recently published in the

literature (MacKinnon, Krull, & Lockwood, 2000). Results showed that all methods based on separately demonstrating the causal steps had low statistical power. This may be a result of the requirement that all three regression equations have to be statistically significant. This excludes many intervening variable models in which the direct and indirect effect have opposite signs and may therefore not be significant.

An alternative, and preferable approach is the joint significance test, described by MacKinnon et al. (2002). MacKinnon and colleagues (2002) suggest to calculate the indirect effect and test it for statistical significance. This means that the independent variables (A) should have a significant influence on the mediator (B) and the effect of the mediator (B) on the dependent variable (C) should still be statistically significant, when controlling for A.

MacKinnon et al. (2002) indicated that manipulating both the mediator and the independent variables can provide stronger evidence for causality compared to the causal-step test developed by Barron and Kenny (1986). In order to calculate the indirect effect, the difference between two regression coefficients should be computed. Furthermore, it is required that two regression analyses are significant to confirm the indirect effect (Judd, & Kenny, 1981).

In contrast with Baron and Kenny (1986) testing intervening variable effects requires one fewer hypothesis test (Preacher, & Hayes, 2004). As a consequence, in this study it is not required that hypothesis 4 is statistically significant.

The research model was tested using multiple regression and the major assumptions of this analysis were checked (Pallant, 2001). There was checked if the independent variables were highly correlated (multicollinearity), moreover if the independent variables didn't consist of other independent variables (singularity). For all variables, dependent as well as independent, outliers were determined. Outliers can be defined as extreme values as compared to the rest of the data. Furthermore, normality,

linearity, homoscedasticity and independence of residuals were checked using the residual scatter plots which were part of the multiple regression procedure.

Different multiple regression analyses were done to assess the contribution of the different variables. State anxiety was regressed on the personal factors in order to asses the contribution of the personal factors to state anxiety (Hypothesis 2). To test for the intervening effect of state anxiety as suggested by MacKinnon and colleagues (2002), three hierarchical multiple regression analyses were conducted.

At first, state anxiety was regressed on the set of situational factors, when controlling for personal factors (Hypothesis 3). Secondly, overall patient satisfaction was regressed on the set of situational factors, when controlling for personal factors (Hypothesis 4). Finally, overall patient satisfaction was regressed on both personal and situational factors and anxiety simultaneously (Hypothesis 6).

It is hypothesized that state anxiety influences overall patient satisfaction (Hypothesis 5). However, it is also expected that the effect of state anxiety on overall patient satisfaction will decrease, when controlling for the different independent variables (Hypothesis 6). Thus, by implementing special adjustments of care delivery, it is expected that the intervening effect of state anxiety (that influences the relation between the independent variables and overall patient satisfaction) will decrease.

<div align="center">Results</div>

In order to test Hypothesis 1, a paired-samples t-test was conducted to evaluate whether there was a decrease in state anxiety levels before and after cataract surgery. There was a statistically significant decrease in state anxiety scores from t1 ($M = 12.32$, $SD = 4.93$) to t2 ($M = 8.94$, $SD = 3.66$), $t(101) = 5.946$, $p = .000$. The eta squared statistic (.26) indicated a large effect size.

Another paired-samples t-test was done for Visual Analog Scale (VAS) scores at t1 and t2. There was a statistically significant decrease in VAS scores from t1 ($M = 27.54$, $SD = 22.94$) to t2 ($M =$

10.24, SD = 14.49), $t(101)$ = 7.084, p = .000. The eta squared statistic (.33) indicated a large effect size too. These results indicate that state anxiety levels decreased from time 1 (one to six weeks before surgery) to time 2 (within one month after surgery).

The relationships between the different variables were investigated using Pearson product-moment correlation coefficients. Table 1 presents all significant correlations for the different variables. As shown in Table 1, being accompanied by a relative and watching the video screen before surgery resulted in lower state anxiety levels. Moreover, personal contact with the ophthalmologist and hospital design showed positive correlations with overall patient satisfaction.

As a test of Hypothesis 2 that women will experience more state anxiety than men, an independent-samples t-test was conducted. There was a significant difference in state anxiety scores for men (M = 9.66, SD = 2.86) and women (M = 11.40, SD = 3.37), $t(100)$ = -2.778, p = .007. The eta squared statistic (.07) indicated a moderate effect size. These results illustrate that women experience higher levels of state anxiety than men.

In order to further test Hypothesis 2 about the influence of gender, trait anxiety and perceived Health Related Quality Of Life (HRQOL) on state anxiety, a standard regression analysis was conducted. State anxiety was regressed on gender, trait anxiety and perceived HRQOL. These three predictors accounted for 23.4% of the variance in test scores (R^2 = .234), which was highly significant, $F(3,98)$ = 9.958, p = .000. As shown in Table 2, gender, trait anxiety and perceived HRQOL demonstrated significant effects on state anxiety.

To test Hypothesis 3, a hierarchical multiple regression analysis was performed to see whether any of the situational factors contributed significantly to state anxiety, when controlling for personal factors. Therefore, gender, trait anxiety and perceived HRQOL were entered at Step 1. Step 2 included outcome expectancy, social support, perceived quality of care, information supply and hospital design.

The hierarchical multiple regression analysis revealed that the model as a whole (which included personal factors from Step 1 as well as situational factors from Step 2) was a significant predictor of state anxiety scores $F(9,92) = 7.160$, $p = .000$. The model as a whole accounted for 41.2% of the variance in state anxiety ($R^2 = .412$).

Gender, trait anxiety, perceived HRQOL, company relative, perceived quality of care and the video screen made unique statistically significant contributions (see Table 2). With respect to the video screen; 49% of all patients watched the video screen just before cataract surgery.

In general, levels of overall patient satisfaction were high ($M = 9.10$, on a 10-point scale). To examine Hypothesis 4 about the overall contribution of the predictors in accounting for overall patient satisfaction, hierarchical multiple regression analysis was used. In order to control for the possible effect of personal factors gender, trait anxiety and perceived HRQOL were entered at Step 1. Outcome expectancy, social support, perceived quality of care, information supply and hospital design were entered at Step 2.

The results of the hierarchical multiple regression analysis indicated that the model as a whole accounted for 26.9% of the variance in overall patient satisfaction ($R^2 = .269$) and this effect was highly significant, $F(9,92) = 3.767$, $p = .000$. As shown in Table 3, personal contact ophthalmologist, perceived quality of care and hospital design made a statistically significant contribution. All other predictors did not make a unique contribution, when the overlapping effects of other predictors were statistically removed.

In order to examine Hypothesis 5 about the expectation that state anxiety negatively relates with overall patient satisfaction, a correlation analysis was performed. There was a significant negative correlation between state anxiety and overall patient satisfaction, $r(102) = -.199$, $p = .045$. The significant influence of state anxiety on overall patient satisfaction was shown in Table 1. This

correlation indicates that people with higher state anxiety levels tend to report a lower overall patient satisfaction.

In order to test Hypothesis 6 about the intervening effect of state anxiety on overall patient satisfaction, after controlling for the influence of different independent variables, hierarchical multiple regression analysis was conducted. In other words: the effect of state anxiety (B) on overall patient satisfaction (C), when controlling for different proposed predictors (A) was tested (see Figure 1).

Gender, trait anxiety, perceived HRQOL, outcome expectancy, social support, perceived quality of care, information supply and hospital design were entered at Step 1 and state anxiety was entered at Step 2. After entry of all predictors at Step 2, the results indicated that the model as whole (which included personal and situational factors from Step 1 as well as state anxiety from Step 2) accounted for 27.2% of the variance in overall patient satisfaction and this effect was highly significant, $R^2 = .272$, $F(10, 91) = 3.394$, $p = .001$.

In the final model, different predictors had unique statistically significant contributions (see Table 4). State anxiety (entered at Step 2) explained an additional 0.2% of the variance in overall patient satisfaction, after controlling for the effect of the different predictors entered at Step 1. The effect of state anxiety was not significant, R Squared Change $= .002$, F change $(1,91) = .297$, $p = .587$.

The results of Hypothesis 5 indicated that the effect of state anxiety on overall patient satisfaction was significant. However, the intervening effect of state anxiety on overall patient satisfaction after the effects of the different independent variables were removed, was not statistically significant. These findings illustrate that the effect of state anxiety on overall patient satisfaction was reduced by personal and situational factors (entered at Step 1).

Discussion

The purpose of this study was to investigate the effects of special adjustments of care delivery to

reduce the impact of anxiety. Furthermore, in this study the influence of anxiety on overall patient satisfaction of patients undergoing cataract surgery was investigated.

A mediation model was examined in which state anxiety was regressed on gender, trait anxiety and perceived HRQOL (Hypothesis 2) and in which state anxiety was regressed on outcome expectancy, social support, perceived quality of care, information supply and hospital design (Hypothesis 3). Moreover, overall patient satisfaction was regressed on the same independent variables (Hypothesis 4). It was expected that the intervening effect of state anxiety on overall patient satisfaction will decrease, when controlling for the different adjustments of care delivery (Hypothesis 6).

In accordance with previous studies (Foggitt, 2001; Nijkamp et al., 2004), there was a statistically significant decrease of state anxiety levels before and after cataract surgery. Moreover, women experienced higher levels of state anxiety compared to men. These findings further reinforce previous studies (Beurs, Beekman, Deeg, Dyck, & Tilburg, 2000; Kindler, Harms, Amsler, Ihde-Scholl, & Scheidegger, 2000). In accordance with former studies, patients' perception of their quality of life (HRQOL) showed a significant association with anxiety (Cahill, Banks, Stinnett, & Toth, 2005). Furthermore, cataract patients with higher levels of trait anxiety experienced higher levels of state anxiety, confirming Hypothesis 2.

Hypothesis 3 which included personal as well as situational factors, was found to be statistically significant. Similar to Bolger and Eckenrode (1991) and Nijkamp et al. (2004) support from a relative was significantly related to state anxiety. Support from a family member or companion and clear expectations were both factors mentioned as very reassuring in the open-ended questions. Unlike previous studies, outcome expectancy was not significantly related to state anxiety (Pager, 2004; Nijkamp et al., 2004). Perceived quality of care was the most important factor in reducing state anxiety.

Similarly, watching a video screen before cataract surgery resulted in lower state anxiety.

In the present study, patients showed high levels of overall patient satisfaction, which indicated satisfaction with ophthalmologists, nurses and the hospital in general. These findings are consistent with previous studies (Nijkamp et al., 2000). Hypothesis 4 was confirmed, because the effect of the different independent variables on overall patient satisfaction was significant. As expected, patients who have personal contact with the ophthalmologist and experience higher quality of care, reported higher levels of patient satisfaction (Nijkamp et al., 2000). Moreover, as expected hospital design (use of light, natural colours and art) led to increased overall patient satisfaction (Ulrich, 1992; Hiddema et al., 2007).

It is worth noting that state anxiety and overall patient satisfaction have some similar as well as different predictors. A common predictor of state anxiety and overall patient satisfaction was perceived quality of care by ophthalmologists and nurses and this was also mentioned as most reassuring in the open-ended questions. As suggested by Lazarus (1991) being accompanied by a relative can help patients reappraise a stressful situation. Moreover, information supply by means of a video screen adds new input about the cataract surgery and in that way also facilitates in reappraising the situation. Social support of a relative or acquaintance and information supply seem to be important when reducing anxiety, while on the other hand overall patient satisfaction was more influenced by overall services like personal contact and the special hospital design.

More importantly, this study shed light on the significant association between state anxiety and overall patient satisfaction. It was found that patients that experience higher levels of anxiety report lower overall patient satisfaction, confirming Hypothesis 5. In order to reduce this negative role of state anxiety, the influence of special adjustments of care delivery was added in Hypothesis 6.

Hypothesis 6 was confirmed, because the effect of state anxiety on overall patient satisfaction

when controlling for the different personal and situational factors, was not significant. As a consequence the mediation model was not supported. However, not supporting the mediation model gave new interesting insights in how to reduce anxiety in patients that undergo cataract surgery. In conclusion, in the present study it was shown that special adjustments of care delivery can facilitate patients in reappraising the cataract surgery as less threatening. Special adjustments of care delivery can help patients to reappraise the situation as one that can be managed successfully.

This study stressed the importance of the influence of anxiety within patients that underwent cataract surgery. To reduce this impact of anxiety (which may be a main goal for health care organizations), different approaches can be applied. So this means that health care organizations are able to decrease anxiety and increase patient satisfaction by adapting organizational processes, using a more patient-centred focus. Previous studies also discussed several ways to improve the quality of hospital care by focusing on patient-centred care (Cleary, Edgman-Levitan, Walker, Gerteis, & Delbanco, 1993; Zandbelt, Smets, Oort, & De Haes, 2005).

A limitation of this study is the use of self-report data which enhances social desirability bias in the results, especially when measuring anxiety. In the waiting room people showed high levels of anxiety, however when filling out the questionnaire patients tend to underestimate their own level of anxiety. Another limitation is the low reliability of the scale measuring 'outcome expectancy'. A last limitation is the restriction of the data to one hospital which limits the generalizability of the results.

Despite the limitations, several major strengths distinguish the present study from previous research. First of all, although considerable research has been done with regard to patients' anxiety and patient satisfaction, the role of state anxiety on overall patient satisfaction has not been previously showed (Nijkamp et al., 2002a). Some other strengths are the high Cronbach's alpha's for most of the scales and the high response rate of questionnaires which resulted in a relatively large sample size.

Lastly, the practical applicability of the results for other health care organizations is another important strength of the current study.

Future studies in this area may also add the immediate surgical outcome in the mediation model. Although Pager (2004) found that there was no statistically significant correlation between the degree of improvement in visual function and patient satisfaction. In the present study was shown that personal factors are important predictors of state anxiety. Health care organizations are recommended to take personal factors into consideration when providing patient education and treatment. Furthermore, measuring preoperative anxiety by means of a short questionnaire can provide useful information for health care organizations that are aiming for patient-centred care.

Another recommendation is to start a patient advisory group in order to create or improve patient-centred care (Meyers, 2008). Patients and families should be encouraged to give advice from safety and quality measures to hospital design, which will result in tremendous information in addition to the present study. The present study can be seen as a basis for further investigation in this area. When other health care organizations implement special adjustments of care delivery, a meaningful comparison group provides the opportunity to further improve the generalizability of the current results.

This study provided a benchmark of the different adjustments of care delivery that The Rotterdam Eye Hospital has applied and can lead to quality improvement in other health care organizations in the Netherlands and beyond. In order to improve patient satisfaction, health care practitioners can utilize these best-practice processes (Rover, 2007). In conclusion, this study highlighted the importance of studying overall patient satisfaction, which former studies on anxiety in cataract patients have not addressed.

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Appendix

Self-Developed Scales

The following questions are about watching a live-surgery on a video screen just before your own cataract surgery.

	No	Actually no	Actually yes	Yes	Not applicable
53. Did you experience the video screen with live-operations on the day of your own cataract surgery as **clear?**	1	2	3	4	5
54. Did you experience the video screen with live-operations as **anxiety arousing?**	1	2	3	4	5
55. Did you experience the video screen with live-operations as **reassuring?**	1	2	3	4	5
56. Did you experience the video screen with live-operations as **pleasant?**	1	2	3	4	5
57. Did you experience it as **anxiety arousing** that a family member or acquaintance could watch your own cataract surgery on a video screen?	1	2	3	4	5
58. Did you experience it as **reassuring** that a family member or acquaintance could watch your own cataract surgery on a video screen?	1	2	3	4	5
59. Did you experience it as **pleasant** that a family member or acquaintance could watch your own cataract surgery on a video screen?	1	2	3	4	5

	No	Yes
61. I watched a live-surgery on a video screen just **before** my own cataract surgery.	1	2

The next questions are about company of a family member or companion during visits at the hospital.

	No	Yes
62. Did you know that it is required to take a **family member or companion** along during visits at the hospital?	1	2

	No	Actually no	Actually yes	Yes	Not applicable
63. Did you experience the company of a family member or companion during hospital visits as **anxiety arousing?**	1	2	3	4	5
64. Did you experience the company of a family member or companion during hospital visits as **reassuring?**	1	2	3	4	5
65. Did you experience the company of a family member or companion during hospital visits as **pleasant?**	1	2	3	4	5

The next questions are about the personal contact with the ophthalmologist who brings the patient to the surgery room and after the surgery back to the waiting room in person.

	No	Actually no	Actually yes	Yes	Not applicable
69. Did you experience the personal contact with the ophthalmologist as **anxiety arousing?**	1	2	3	4	5
70. Did you experience the personal contact with the ophthalmologist as **reassuring?**	1	2	3	4	5
71. Did you experience the personal contact with the ophthalmologist as **pleasant?**	1	2	3	4	5

The next questions are about the hospital design of The Rotterdam Eye Hospital. Questions will be asked about the use of light, colours and art within the hospital.

	No	Actually no	Actually yes	Yes	Not applicable
75. Did you experience the use of light within the hospital as **reassuring?**	1	2	3	4	5
76. Did you experience the use of light within the hospital as **anxiety arousing?**	1	2	3	4	5
77. Did you experience the use of light within the hospital as **pleasant?**	1	2	3	4	5
78. Did you experience the use of natural colours and materials within the hospital as **reassuring?**	1	2	3	4	5
79. Did you experience the use of natural colours and materials within the hospital as **anxiety arousing?**	1	2	3	4	5
80. Did you experience the use of natural colours and materials within the hospital as **pleasant?**	1	2	3	4	5
81. Did you experience the use of art within the hospital as **reassuring?**	1	2	3	4	5
82. Did you experience the use of art within the hospital as **anxiety arousing?**	1	2	3	4	5
83. Did you experience the use of art within the hospital as **pleasant?**	1	2	3	4	5

Table 1

Pearson Correlation Matrix for the Strengths of Associations Between the Different Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Gender	-										
2. Trait anxiety	.150	-									
3. Perceived HRQOL	-.211*	-.391**	-								
4. Outcome expectancy	-.244**	-.330**	.249*	-							
5. Company relative	.092	.014	-.015	-.088	-						
6. Personal contact opthal	.037	.014	-.006	.003	-.165	-					
7. Perceived quality of care	.030	-.092	.093	-.075	.029	.080	-				
8. Video screen	.054	-.029	.047	.086	.068	.065	.140	-			
9. Hospital design	-.218*	.039	.086	.037	.018	.046	.032	-.029	-		
10. State anxiety	.268**	.384**	-.367**	-.281**	-.168	-.121	-.296**	-.251*	-.132	-	
11. Overall patient satisfaction	-.183	-.169	.123	.023	-.044	.213*	.383**	.089	.233*	-.199*	-

*p < 0.05, **p < 0.01.

Table 2

Hierarchical Multiple Regression Analysis for The Effect of Different Determinants on State

Anxiety (N = 102)

	State anxiety		
Variable	*B*	*SE B*	β
Step 1			
Gender	1.170	.589	.180*
Trait anxiety	.297	.106	.270**
Perceived HRQOL	-.063	.028	-.223*
Step 2			
Gender	1.240	.559	.191*
Trait anxiety	.247	.100	.224*
Perceived HRQOL	-.049	.025	-.174*
Outcome expectancy	-.484	.321	-.133
Company relative	-.490	.196	-.205*
Personal contact ophthalmologist	-.078	.048	-.133
Perceived quality of care	-.146	.052	-.231**
Video screen	-.051	.023	-.182*
Hospital design	-.018	.022	-.067

Note. *p = 0.05, **p = 0.01.

Table 3

Hierarchical Multiple Regression Analysis for The Effect of Different Determinants on Overall Patient Satisfaction (N = 102)

	Overall patient satisfaction		
Variable	*B*	*SE B*	β
Step 1			
Gender	-1.099	.714	-.155
Trait anxiety	-.156	.128	-.130
Perceived HRQOL	.012	.033	.040
Step 2			
Gender	-1.065	.680	-.150
Trait anxiety	-.166	.122	-.138
Perceived HRQOL	.000	.031	.000
Outcome expectancy	-.185	.390	-.047
Company relative	-.051	.238	-.020
Personal contact ophthalmologist	.114	.058	.179*
Perceived quality of care	.239	.063	.346**
Video screen	.013	.028	.044
Hospital design	.056	.027	.190*

Note. *p = 0.05, **p = 0.01.

Table 4

Hierarchical Multiple Regression Analysis for The Effect of State Anxiety on Overall Patient

Satisfaction, when Controlling for Different Determinants (N = 102)

	Overall patient satisfaction		
Variable	*B*	*SE B*	β
Step 1			
Gender	-1.065	.680	-.150
Trait anxiety	-.166	.122	-.138
Perceived HRQOL	.000	.031	.000
Outcome expectancy	-.185	.390	-.047
Company relative	-.051	.238	-.020
Personal contact ophthalmologist	.114	.058	.179*
Perceived quality of care	.239	.063	.346**
Video screen	.013	.028	.044
Hospital design	.056	.027	.190*
Step 2			
Gender	-1.151	.701	-.162
Trait anxiety	-.183	.126	-.153
Perceived HRQOL	.003	.031	.010
Outcome expectancy	-.152	.396	-.038
Company relative	-.017	.247	-.007

Table 4

Continued

Variable	*B*	*SE B*	β
Personal contact ophthalmologist	.120	.060	.187*
Perceived quality of care	.249	.066	.361**
Video screen	.017	.029	.055
Hospital design	.057	.027	.194*
State anxiety	.069	.127	.064

Note. *p = 0.05, **p = 0.01.

Figure Caption

Figure 1. Mediation model: determinants of anxiety and the influence of anxiety on overall

patient satisfaction of patients undergoing cataract surgery.

Personal factors

Gender

Trait anxiety

Perceived HRQOL

Situational factors

Outcome expectancy

Social support

Perceived quality of care

Information supply

Hospital design

State anxiety

Overall patient satisfaction

A   B   C