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Family members prior to surgery: Exploring stress, anxiety, family functioning and perceived support

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FAMILY MEMBERS PRIOR TO SURGERY: EXPLORING STRESS, ANXIETY, FAMILY FUNCTIONING AND PERCEIVED SUPPORT

by

Alice L. Butzlaff

DISSERTATION

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FAMILY MEMBERS PRIOR TO SURGERY: EXPLORING STRESS, ANXIETY, FAMILY FUNCTIONING AND PERCEIVED SUPPORT

Alice L. Butzlaff

Since most of the attention at a preoperative visit is focused on the patient, little is known about family members' experience prior to surgery. The purpose of this study is to describe the relationships between family member anxiety, satisfaction with family functioning and perceived support from the family unit in the presurgical period. This study accounts for selected factors predictive of anxiety utilizing descriptive variables and clarifies what is most stressful for family members in their own words. A total of 350 family members were recruited during patients' preoperative hospital visits, on an average of 2.6 days before surgery. A family member questionnaire was distributed to collect information about State anxiety on the State-Trait Anxiety Inventory (S-STAI), satisfaction with family functioning (Family APGAR) and Perceived Social Support from family (PSS-Fa), including an open-ended statement about stressors, and background questions. A multiple regression analysis indicated that approximately 22% of the total variance in anxiety scores was accounted for by the linear combination of family function, religious affiliation, family member role, and surgical severity ($F_{8, 341} = 11.932$, $p < .001$). No significant differences were found in anxiety scores based on age, gender, ethnic background, or whether an adult or child was undergoing surgery. Finally, three primary themes were generated surrounding family member preoperative stressors: (1) Stress of the Surgical Event, (2) Stress of Resource Consumption, and (3) Stress of Healthcare Matters. The stress of the surgical event included the anticipated outcome of the surgery relative to patient's physical condition and emotional status as well as surgical sequelae including death, complications, pain and difficult recovery. Stress of

resource consumption included caring for other family members, outside obligations like work, financial strain and negotiating travel and lodging. Stress of healthcare matters included anxious waiting for surgery, dealing with doctors and scheduling appointments. Implications for healthcare providers include identifying stressors early, providing information and creating a more 'family-friendly' environment. Additionally, more attention should be paid to family members in the preoperative period since, high anxiety, alteration in family function and lack of perceived support may ultimately be linked to surgical outcomes.

Sally H. Rankin, RN, PhD, FAAN
Professor and Chair

Alice L. Butzlaff, RN, MSN, FNP
Doctoral Candidate

DEDICATION

To my family

and

To all family members prior to surgery

ACKNOWLEDGMENTS

Warmest appreciation to dissertation committee members,

whose wisdom and grace inspired this project.

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CHAPTER I: SETTING THE CONTEXT

Undergoing major surgery is a significant life event for an increasing number of people. In the year 2005 alone, it is estimated that near 30 million surgeries will be performed in the United States (American Hospital Association, 2005). With advances in technology as well as demand, the number of surgeries will continue to increase in years to come. Given this trend, it comes as no surprise that surgeries comprise the largest source of revenue for most healthcare institutions.

In an attempt to decrease surgical costs, there has been a shift away from in-hospital services. For over a decade, insurers have dictated the length of hospital stay, required that certain elective procedures be performed on an outpatient basis, and encouraged recuperation at home rather than in the hospital (Williams, 1993). Nowhere is this shift more evident than preoperatively, as patients now arrive within hours of a surgery rather than being admitted the night before. As a result, those closest to the patient are often assuming preoperative caregiving roles.

The family unit is a constant in the patient's life, whereas time spent in the hospital is only temporary. Yet little attention has been paid to helping family members prepare for and deal with a patient's surgical experience. Families may be the first to come into contact with feelings of vulnerability, uncertainty and anxiety from the patient and in fact, may share these same uncomfortable emotions. With less time spent in the hospital however, these feelings may go unrecognized by healthcare providers. Preoperative hospital care tends to be patient centered, while the family remains largely ignored. Family members may be isolated in waiting areas with little to do but remain present. A full description of the family member experience prior to surgery still remains unspecified.

Statement of the Problem

Since most of the attention at a preoperative visit is focused on the patient, little is known about family members' experience prior to surgery. The family may be the patient's primary source of support, yet an anxious family member may have a limited ability to provide help and their apprehensions may even aggravate the patient's own worries. A lack of support along with high anxiety levels has the potential to impact on family function and the success of surgical outcomes. Although the effect on a surgical outcome is beyond the scope of the present investigation, the first goal is to describe family member anxiety, family function and perceived social support before the surgical event.

Surgical Event

A surgery represents an event which requires appraisal. While some surgeries may constitute an event of little overall importance to the family, other surgeries may represent a significant threat, leaving family members feeling they can do practically nothing to reduce the chances of one of its members undergoing pain or sustaining loss. "From a psychological standpoint, a major surgical operation constitutes a stress situation which resembles many other types of catastrophes and disasters where imminent danger is faced—the possibility of suffering acute pain, of undergoing serious body damage, and of dying" (Janis, 1974, p. 10).

Anxiety

Anxiety is an emotional response to a threatening situation (Spielberger, 1972) such as surgery. Surgical anxiety is influenced by apprehensions about pain, loss of independence, uncertainty about the future, and fear of death (Caumo et al., 2001). Anxiety as an emotion can vary from mild apprehension to intense fear or panic.

A state of anxiety consists of feelings of tension, apprehension, nervousness, unease, concern, worry and heightened activation or arousal of the autonomic nervous system (Spielberger, 1986).

Family Members

The family is defined as two or more persons who are joined together by bonds of sharing and emotional closeness and who identify themselves as being part of a family (Friedman, Bowden, & Jones, 2003). Each member of the family may have unique identifying characteristics which are considered descriptive variables. Descriptive variables characterize family members by demographic information such as age, gender, marital status and ethnic background, along with other descriptions such as their role in the family, whether they are living with the surgical patient, the number of people in their household, their distance in miles from the hospital, educational level, employment status, annual household income, religious affiliation and prior surgical experience.

Family Function

Family function has been defined as the core responsibilities that sustain or enhance relationships among family members, nurture the development of individuals and manage the health of all members (Lewis, 2004). Classically, family function encompasses five purposes that all members must fulfill in order for the family to work effectively: adaptability, partnership, growth, affection and resolve (Smilkstein, 1978). In other words, the family's ability to help one another, communicate with each other, accept changes, express emotion and share time together. Optimal family function promotes the emotional and physical maturation of all members. Satisfaction with functioning implies that the family unit meets the expectations of each member while dissatisfaction with functioning may have an adverse influence on emotional well-being.

Perceived Support

Perceived social support can be defined as the belief that help and support is available if needed (Cohen, Underwood, & Gottlieb, 2000). Support includes both helpful emotional behaviors: love, concern, and encouragement, as well as instrumental behaviors: companionship, practical assistance, information and material aid. Although, the family may function as the patient's first line of support, family members may simultaneously require care or be equally in need of support themselves. Giving social support can be draining, which results in the depletion of family resources, exhaustion and despair (Thompson & Ontai, 2000). Many family members believe that they give more social support than they receive. In fact, most may perceive they are receiving less support than the surgical patient (Northouse, Mood, Templin, Mellon, & George, 2000).

Purpose of the Study

The primary purpose of this study was to describe the relationships between family member anxiety, satisfaction with family functioning and perceived social support from the family unit in the preoperative period. This study attempted to account for selected factors predictive of anxiety utilizing descriptive variables and clarified what was most stressful for family members in their own words.

The specific aims and related hypothesis of this study were to:

1. Explore levels of family member anxiety in relation to satisfaction with family functioning, perceived social support from the family and descriptive variables prior to surgery.

   H_1 Family member anxiety is negatively related to satisfaction with family functioning, perceived social support from family and age. Females and those of non-White ethnic background (e.g., Asians and Hispanics) are expected to have more anxiety prior to surgery.

2. Explicate what is most stressful for family members prior to surgery.

Need for the Study

As the rate of surgeries increase, more information will be needed about the family member experience as they assume preoperative caregiving roles. As a foundation for research, the scope of available literature and applicable theoretical perspectives need to be explored. Next, a study design should be selected and alternative methods employed to accurately investigate family members. A thorough discussion of the link between anxiety, family functioning, perceived support and descriptive variables should be explicated and finally, future implications for preoperative research need to be addressed.

Unfortunately, very few empirical studies have been conducted on family members who have accompanied the patient to a preoperative hospital visit. This selective approach has resulted in a lack of understanding about family members, which has weakened the understanding of the patient's 'environment' prior to surgery. In fact, the family is rarely even acknowledged as part of the patient's preoperative 'environment' for treatment. Hospital routines, physical aspects of care and other demonstrable methods of treatment may take precedence (Chesla, 1996; Jones, 2001) while barriers like waiting areas seclude, isolate or remove a family member from interaction.

Less time spent in the hospital means that the majority of the anxiety experienced before surgery is likely to be encountered at home, not in the hospital. It is known that family members can buffer the effects of stress and its negative consequences (Friedman et al., 2003). Surgery represents a complex event for families including a 'contagion' of emotion which may 'infect' and affect others with anxiety. Therefore, a specific need remains to review the existing literature about those who are closest to the patient.

Within the hospital setting, there is also a necessity for the building, testing and application of cognitive theories. Within the preoperative context particularly, there is little preexisting knowledge regarding the adaptability of predictive frameworks. It is therefore crucial to discuss and acknowledge characteristics of the family processes involved. Because concepts such as anxiety, satisfaction with family functioning, and perceived social support are multi-dimensional, they need proper definition. Attention also needs to be paid to the dimensions of each concept within the various theoretical frameworks. Finally, the underlying assumptions embedded in each theory will provide a reference for hypothesizing about family members prior to surgery.

To best test a family member hypothesis, accurate methods need to be employed. Descriptive design should allow for the substantiation of the need for future implementation of preoperative intervention. Because of the absence of preoperative family data, a sample of adult family members should be identified and tested. Data collection should involve methods of psychometric measurement, which include self-report to accurately capture the emotion and perception of the family member. Accurate analysis needs to include reliable statistical quantitative methods as well as descriptive qualitative interpretation.

Results concerning family members' self-reported stressors, anxiety, family functioning, perceived support and descriptive variables should be reported. Findings need to be obtained and compared to the ones expected. Analysis should both defend and test the discrepancies within the hypothesis as well as exposed study limitations. Once the family member's experience has been delineated and understood, clinical practice can be influenced by empirical findings.

Nurses in particular should do what they can to help the family reduce anxiety and gain support. Traditionally, contact with nurses is fragmented during the preoperative period (Cunningham, Hanson-Heath, & Agre, 2003). Yet it is crucial, that nurses pay attention not just to the patient, but acknowledge the family in the presurgical process. Findings from descriptive studies can be disseminated to improve family-focused research, minimize family member anxiety and justify support programs. In fact, the experience of the patient's family may be just as critical to the design, implementation and evaluation of any anxiolytic method previously presented in preoperative patient research.

As less time is spent in the hospital, the future of health care surrounding surgery will necessitate a more family-focused perspective. It will be recognized that family members' attitudes and supportive behaviors prior to surgery may be mutually interdependent with that of the patient. Ultimately, reducing family anxiety while enhancing their ability to provide support may prove to increase family functioning and transmit less anxiety to patients undergoing surgery.

In conclusion, the goal of this study is to make a significant contribution to the existing body of preoperative literature and offer salient information about family members prior to surgery. Empirical support will provide direction for future inquiries that would explore how family member anxiety, function and support can influence patient outcome. Ultimately, surgery will be redefined as not only a significant life event for the patient, but for the family member.

CHAPTER II: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

To further describe the preoperative experience of family members, an integrative literature review and assessment of theoretical constructs will be undertaken. The specific intentions are to: (a) review what is known about preoperative anxiety, (b) establish what is known about family member anxiety and (c) emphasize the role of family functioning and perceived support prior to surgery. Additionally, the influence of age, gender and ethnicity will be highlighted as possible modifiers of anxiety, family function and support. The central purpose of this review is to build a foundation for conceptualizing the family member prior to surgery. Major gaps and limitations of relevant literature will be summarized.

Following this review, various theoretical constructs will be discussed. A conceptual framework will be proposed to consider the interactions between major concepts under investigation. Assumptions embedded in theory and relevant research will be integrated to formulate a hypothesis concerning family member anxiety, family functioning and perceived support prior to surgery. Finally, major concepts and variables will be defined for future study.

Review of Relevant Literature

Patient Anxiety

Anxiety is a universal human experience. From an evolutionary perspective, anxiety arousal serves as a protective mechanism for survival. Yet, on an emotional level, the experience of anxiety can be uncomfortable, especially when it occurs in response to the threat of surgery. As a multidimensional concept, the anxiety response has been measured both in terms of emotional manifestations and physiologic effects in patients prior to surgery.

In order to define anxiety in the preoperative period, detailed patient accounts have tried to predict and itemize preoperative fears. In a study of 734 patients undergoing a variety of procedures, three distinct dimensions of anxiety were revealed by factor analysis: the fear of the unknown (n = 506, α = .83) the fear of feeling ill (n = 500, α = .75) and fear for one's life (n = 514, α = .70) (Kindler, Harms, Amsler, Ihde-Scholl, & Scheidegger, 2000). According to scores on visual analogue scales, patients were most anxious during the waiting period preceding surgery (n = 536, M = 35 ± 1 *SEM*). Higher anxiety scores on the State portion of the State Trait Anxiety Inventory (S-STAI) were found with adults under 37 years of age (n = 76, M = 45 ± 1 *SEM*), females (n = 76, M = 45 ± 1 *SEM*), the first surgical experience (n = 97, M = 39 ± 1 *SEM*) or negative surgical experience (n = 65, M = 41 ± 1 *SEM*). In other words, most anxiety was encountered prior to surgery by younger female patients who had either no experience or a bad experience with surgery.

Fears surrounding surgery have been associated with uncertainty about recovery, apprehensions about pain and the fear of death. The experience of anxiety can make these fears a reality. Anxiety is a well known potent stimulus for the sympathetic nervous system (i.e., 'fight or flight') and a psychoendocrine response. This can elicit deleterious physiologic effects, including increased adrenaline and corticosteroid production. These excretions, in turn, are associated with increased blood pressure, heart rate and arrhythmias predisposing the individual to stroke, myocardial infarction and cardiac failure.

Deleterious outcomes have been empirically linked to preoperative anxiety. It has predicted higher intraoperative surgical and anesthetic risk (Demirtas et al., 2005; Gentry, Musante, & Haney, 1973; Maranets & Kain, 1999; Williams, Jones, & Williams, 1969).

Preoperative anxiety has also been associated with postoperative anxiety (Caumo et al., 2001). In addition, preoperative anxiety has been linked to more postoperative pain (Kain, Sevarino et al., 2001; Logan & Rose, 2005; Maggirias & Locker, 2002), delayed wound healing (Kiecolt-Glaser, Page, Marucha, MacCallum, & Glaser, 1998), and a longer length of hospital stay (Devine, 1992; Krohne & Stangen, 2005). In other words anxiety, in and of itself, is responsible for the deleterious outcomes which have increased hospital costs - the same costs that insurers have been fervent to contain.

To improve surgical outcomes and reduce hospital costs, great attention has been paid to decreasing preoperative anxiety. Anxiolytics presented in bold include: **preoperative information** (Asilioglu & Celik, 2004; Bergmann et al., 2001; Giraudet-Le Quintrec et al., 2003), **psychological treatment** (Johren, Jackowski, Gangler, Sartory, & Thom, 2000), **videotape preparation** (Doering et al., 2000; Lee, Chui, & Gin, 2003), an **informational CD-ROM** (Danino et al., 2005), a **computer website** (Hering, Harvan, Dangelo, & Jasinski, 2005), **preoperative music** (Cooke, Chaboyer, & Hiratos, 2005; Evans, 2002; Mok & Wong, 2003; Wang, Kulkarni, Dolev, & Kain, 2002), **hypnosis** (Butler, Symons, Henderson, Shortliffe, & Spiegel, 2005; Ghoneim, Block, Sarasin, Davis, & Marchman, 2000), **massage** (Simmons, Chabal, Griffith, Rausch, & Steele, 2004), **hand-holding** (Kim, Cho, Woo, & Kim, 2001; Moon & Cho, 2001), **acupuncture** (Wang, Peloquin, & Kain, 2001), and **premedication** (Hahm et al., 2002; Martens-Lobenhoffer, Eisenhardt, Troger, Rose, & Meyer, 2001; Oshima et al., 2001; Wolf et al., 2003). Unfortunately, it has been argued that some interventions are not only time-consuming but actually increase preoperative cost (Wang et al., 2001). Hence, the search for low-cost preoperative healthcare intervention continues.

Yet, the most notable gap in preoperative patient studies is the neglect for the most cost-effective and potentially natural anxiolytic resource – the family. Family members are often the first to come into contact with a patient's anxiety. Over 25 years ago, several longitudinal studies were conducted with patients whose highest average anxiety scores were reached several days prior to admission for surgery, even before the patient entered the hospital (Johnston, 1980). Not surprisingly, the mere anticipation of hospitalization and surgical threat caused even greater anxiety than the actual procedure. Later, corroborating investigations showed that anxiety measured on the day prior to surgery was highly predictive of patient anxiety immediately before the procedure (Badner, Nielson, Munk, Kwiatkowska, & Gelb, 1990; Lichtor et al., 1987). As evidence suggests, most of the anxiety experienced prior to a surgical event may be encountered in the home, not in the hospital. Clearly, those who are closest to the patient will come into contact with this anxiety. Yet even though family members assume a variety of roles in the patient's preoperative activities, there remains little research available about the family member's experience.

Family Member Anxiety

Available literature within the hospital setting has highlighted family 'beginnings' (e.g., neonatal/pediatric) or family 'endings' (e.g., intensive care/end-of-life care). However, few studies have examined the emotional distress and lack of support which may be experienced by a family member confronting a patient's surgery. Empirical evidence has been complied with a focus on literature available surrounding the surgical process. Surgical research that has been conducted center upon parents of young children and spouses of adult patients.

Parent and Child Anxiety

Pediatric literature is the first to acknowledge the importance of family members in the preoperative period. It is estimated that 50% to 75% of children undergoing surgery will develop extreme anxiety and distress prior to the event (Kain, Wang, Mayes, Krivutza, & Teague, 2001). In an effort to reduce anxiety, techniques which involve family members have been used, including preoperative education and avoidance of parental separation.

In order to investigate anxiety, 56 parents and children were described prior to same day surgery (Kain, Mayes, Weisman, & Hofstadter, 2000). A week before surgery, participants were invited to attend a 30-minute preparation program. The program included a tour of the operating rooms and recovery unit as well as surgery-modeling using dolls. On the day of surgery, anxiety was measured using the State portion of the State-Trait Anxiety Inventory (S-STAI) for the parent and the Modified Yale Preoperative Anxiety Scale (mYPAS) for children. The parent's anxiety score increased from the preoperative holding area ($M = 44 \pm 12$ *SD*) to the point of separation ($M = 49 \pm 13$ *SD*). The child's anxiety score was significantly correlated to an increase in parental anxiety ($r = .44$, $p = .05$). Multiple regression analysis demonstrated that parental anxiety was an independent predictor of children's preoperative anxiety when controlling for a child's age, cognitive abilities and parental coping style ($R^2 = 0.38$, $F_{2, 53} = 5.50$, $p = .003$). Investigators concluded that calm parents functioned as a 'stress reducer' for their children. However, anxious parents seemed less available to respond to the child's needs and signals of increasing distress. Investment in reducing parental anxiety was deemed important since it could affect a child's anxiety and behavior.

Reduction of anxiety was also investigated using a combination of parental presence and sedative premedication prior to surgery (Kain, Mayes, Wang et al., 2000). Ninety-three children between the ages of 2 and 8 were premedicated with oral midazolam syrup (0.5mg/kg) at least 20 minutes prior to surgery. One group of parents ($n = 47$) was allowed to accompany their child into the operating room during induction. Again, anxiety was measured using the S-STAI for parents and the mYPAS for children. Parents who accompanied their children into the operating rooms were significantly less anxious than parents who did not ($F_{2, 93} = 4.46, p = .037$). However, after premedication, there were no significant differences in child anxiety scores between these two groups. Not surprisingly, the majority of parents (98%) indicated that they would like to be present for induction in the future. Again, investigators concluded that since the parent-present group rated the most satisfaction with same day surgery, attention should be focused on the parent as well as the patient.

In an attempt to directly reduce parental anxiety, one investigation offered acupuncture to mothers in the preoperative period (Wang, Maranets, Weinberg, Caldwell-Andrews, & Kain, 2004). Sixty-seven mothers of children undergoing minor surgeries were randomly assigned to an acupuncture intervention group or a sham acupuncture control group. Anxiety was measured with the STAI for mothers and the mYPAS for children. Maternal anxiety in the acupuncture group was significantly lower ($F_{1, 65} = 4.1, p = .04$) than in the control group after induction. Children whose mothers received the intervention were significantly less anxious ($F_{1, 65} = 4.8, p = .031$). Findings demonstrated that decreasing maternal anxiety during the preoperative period reduced child anxiety.

Dissimilar levels of parental anxiety have been noted in differing ethnic groups. Low preoperative anxiety scores were found in 76 Italian parents (Messeri, Caprilli, & Busoni, 2004) before minor surgeries (i.e. hernia repairs, circumcision, hypospadias repair, orchidopexy, cystoscopy, hydrocelectomy, strabismus repair and muscle biopsies). The lowest S-STAI scores were found for fathers ($n = 37$, $M = 25 \pm 20$ *SD*). However, statistically significant correlations were still noted between the stress of the child as rated by the anesthesiologist at induction and the parent's anxiety ($p = .034$). Differences in child stress ($p = .032$) were reported depending on whether the mother ($n = 39$, $M = 36 \pm 14$ *SD*) or father ($n = 37$, $M = 25 \pm 20$ *SD*) accompanied them to the operating room.

At the other extreme, in Hong Kong, Chan and Molassiotis (2002) reported high anxiety scores for 50 Chinese parents prior to similar minor urologic or general/plastic surgeries. Parents in an experimental group ($n = 25$, $M = 47 \pm 11$ *SD*) received an educational program about the role and expectations of being present for induction while parents in the control group ($n = 25$, $M = 49 \pm 9$ *SD*) received routine instruction. Postoperatively the experimental group had lower anxiety scores than the control group ($F_{1, 49} = 14.64$, $p < .001$) with a large effect size of 0.54 standard deviation units. In addition, there was a significant negative relationship ($r = -.61$, $p < .001$) between postoperative parental state anxiety and satisfaction with hospital care score. The repercussions of anxiety gain magnitude, as several investigations demonstrate the use of anxiety as a quality indicator the family's satisfaction with hospital care (Chan & Molassiotis, 2002; Kindler et al., 2000).

In order to improve family-focused care, information was gathered from parents about what hospitals and staff could do to effectively reduce a child's anxiety (Wollin et al., 2004). Interviews were conducted with 108 mothers and 38 fathers at the time of the

child's surgery. The anticipation of 'needles' was reported by both parents and their children as an anxiety enhancer. However, since most children received inhaled mask induction (i.e. they sustained no contact with needles while awake), investigators suggested that more information about hospital procedures should be provided. Parents also commented that they would like more communication from both doctors and nurses. Finally, parents recommended that the hospital create a child-friendly environment with more posters and toys to distract children during the wait prior to surgery.

To summarize, the importance of family involvement for pediatric patients prior to surgery has been universally acknowledged. Although a debate continues about the benefit of parent participation on the child, the benefit to the parent has been well established (Chan & Molassiotis, 2002; Kain et al., 2003; Kain, Mayes, Weisman et al., 2000; Odegard, Modest, & Laussen, 2002; Wang et al., 2004). In fact, Kain, Mayes, Wang et al., (2000) reported that 90% of parents rated themselves as being helpful to their child during anesthesia induction, whereas staff anesthesiologists rated only a minority of parents as helpful (12%). Potential advantages of family participation included calming the patient, feeling 'helpful' and witnessing the proficiency of providers. Disadvantages of family member presence included higher anxiety in the room, distraction from procedure, medical-legal concerns and the possible mistrust of providers (Fein, Ganesh, & Alpern, 2004).

In spite of the attention to parents in pediatric literature, descriptive characteristics of the family member accompanying the patient remain limited. Not surprisingly, the most common description of parents was predominately young mothers of young children (Chan & Molassiotis, 2002; Kain et al., 2003; Kain, Mayes, Weisman et al., 2000; Odegard et al., 2002; Wang et al., 2004; Wollin et al., 2004). It has been argued

that young mothers of children might be more predisposed to anxiety in the first place (Chan & Molassiotis, 2002; Wang et al., 2004). Nevertheless, there is compelling evidence to imply that parental anxiety can be an independent predictor of a child's anxiety (Kain, Mayes, Weisman et al., 2000; Wang et al., 2004). Anxiety appears to be a 'contagious' emotion (Planalp, 1999). As pediatric studies suggest, if emotional reactions of the parent are important to the child's well-being, it might be expected that adult patients may also benefit from family involvement prior to surgery.

Spouse & Significant Other Anxiety

Spouse or partner research provides even more information concerning adult family members. In a classic interventional study, Dziurbejko and Larkin (1978) tried to determine if preoperative instruction that included a patient's husband would be more beneficial than patient instruction alone. A small sample of 21 female patients undergoing gynecological procedures was randomly divided into three groups of seven: patient/husband, patient alone, and a control group. Treatment groups were given 30 minutes of instruction that covered physiological and psychological aspects of the surgical experience, while the control group received routine information. A nurse rated both the patient and family on a five-point investigator-developed scale the night before surgery and on the fifth postoperative day. After the preoperative teaching was complete, ratings for family member anxiety in the experimental groups were significantly different than the control group the night before surgery ($F_{2, 18} = 11.02, p < .01$) and five days after surgery ($F_{2, 18} = 9.57, p < .01$). Limitations included a small sample size, nurse-rated observations instead of self-reporting, an average length of stay of 6.7 to 11.1 days and gynecological procedures which are now completed on an outpatient basis or with an overnight stay.

Another interventional study addressed spousal anxiety independent of the patient (Silva, 1979). The purpose of the study was to determine if the spouse would experience less anxiety and show more favorable attitudes toward surgery and hospitalization if given orientation information. Forty-eight spouses (i.e., 16 females, 32 males) of patients undergoing prostatectomy, cholecystectomy, herniorrhaphy or gynecological procedures were randomly assigned to Solomon four-groups ($n = 12$). A confounding variable was that 41 out of 47 spouses had prior experience with surgery themselves or in their immediate family. Results showed reduced anxiety toward surgery ($\chi^2 = 11.80, p < .001$) and reduced anxiety toward hospitalization ($\chi^2 = 15.19, p < .001$) on an investigator-developed Spouse Questionnaire. Unfortunately, the S-STAI measured before and after surgery, with established reliability and validity, did not show a significant change.

A longitudinal descriptive study of couples after coronary artery bypass grafting (CABG) had presurgical implications expressed retrospectively (Gilliss, 1984). Qualitative interviews were conducted with 71 couples in the hospital following CABG and 6 months later in the home. Spouses had significantly higher amounts of stress ($t_{70} = 3.43, p = .001$) compared to patients on the Impact of Event Scale. Stress scores were also significantly correlated between spouse and patient ($r = 0.28, p = .018$). Even though 86% of the spouses were female, further regression analysis revealed that the difference in stress score was not due to gender but specifically to the spousal 'role'. Although this study was conducted retrospectively, couples reported that 'anxious waiting for the surgery' was highly stressful. Moreover, interpretations of interviews revealed that the most frequently reported sources of stress for the couple included: the wait for surgery, lack of control over hospital events, lack of privacy and information about the hospital experience and recovery.

Subsequently, an educational intervention was conducted for significant others prior to CABG (Raleigh, Lepczyk, & Rowley, 1990). Preoperative instruction was given to 74 patients and 72 significant others within seven days of surgery. Again, 86% of the significant others were female and 51 were spouses. However, this study also included 11 family members who were adult children and 8 family members who were either siblings, other relatives or friends. Participants completed the S-STAI before the class, after the class and on the evening prior to surgery. Findings supported that significant others were more anxious than the patients prior to the class ($t_{141} = 3.99, p < .001$). After the class, the significant others' mean anxiety score decreased, but not significantly. Furthermore, the anxiety scores of significant others on the S-STAI consistently remained higher than patient scores, but unlike Gilliss (1984) were not significantly correlated with patient scores. Raleigh et al., (1990) supported the importance of including significant others in preoperative instruction since not only would the family benefit from preoperative information, but they, in turn, could reinforce the information with the patient and transmit less anxiety.

Postoperatively, the emotional responses of 417 patient-spouse pairs were investigated within a month after acute myocardial infarction, percutaneous angioplasty or CABG (Moser & Dracup, 2004). Again, the sample was reported as 86% female, but regardless of gender, spouses had higher levels of anxiety ($p < .001$) and depression ($p < .001$) than the respective patient on the Multiple Affect Adjective Checklist. Patients' psychosocial adjustment to illness was found to be worse when the spouses exhibited more anxiety. Investigators recognized that spouses developed and maintained higher levels of anxiety yet, not surprisingly, the majority of support from healthcare providers was directed toward the patient.

Comparison of patient and family member anxiety has been conducted in several studies (Moser & Dracup, 2004; Raleigh et al., 1990). Most noteworthy, a descriptive study from oncology (Cassileth et al., 1985) was able to significantly link the emotional states of patients and their matched relatives. Investigators examined a heterogeneous sample of 201 cancer patients and relatives (i.e., 67% spouses, 2% parents, 16% children, 5% siblings and 10% other) within 30 days after cancer diagnosis. Three self-report measures were utilized to compare psychological status: the S-STAI, the Profile of Mood States (POMS) and the Mental Health Index (MHI). Despite large individual variation, results showed significant correlations between patients and their matched relatives on the S-STAI ($r = .28, p < .0001$), POMS ($r = .42, p < .000001$), and MHI ($r = .40$, $p < .00001$). Surprisingly, demographic variables like age, gender and time elapsed since cancer diagnosis were found not to influence scores on the psychological measures. Although measurement was limited by a one-time, cross-sectional data collection, results confirmed a mutuality of patient and family member response.

In summary, the most significant research relevant to the preoperative period demonstrates several assumptions about the family member anxiety that invite further study. First, family members do experience anxiety prior to surgery and may in fact be more anxious than the patient (Raleigh et al., 1990). Second, those who were younger (Chan & Molassiotis, 2002; Kindler et al., 2000; Wang et al., 2004) and female (Chan & Molassiotis, 2002; Kindler et al., 2000; Messeri et al., 2004; Wang et al., 2004) exhibited more anxiety. Third, high and low extremes of anxiety were found in those of differing ethnic backgrounds (Chan & Molassiotis, 2002; Messeri et al., 2004). Finally, mutuality exists between emotional responses of family members (Cassileth et al., 1985; Kain, Mayes, Weisman et al., 2000) which may have implications for interventional research.

What still remains unknown are more specific characteristics and circumstances of family members prior to surgery. One might expect to find some variation according to socioeconomic status (i.e., employment, annual household income) and religious affiliation. Other descriptive variables such as the proximity of the family (i.e., adult family members living apart versus living together) and the distance of the family residence from the hospital should also be taken into consideration.

Patients' Perceived Support

As with anxiety, the concept of social support has been investigated from the patient's perspective prior to surgery. Not only has empirical evidence suggested that family members' provide a significant amount of support for the patient, but a lack of perceived support is linked to higher anxiety. Patients have identified family members as a primary source of support. For example, 92 male cardiac patients reported that their spouse provided equal amounts of informational support and more emotional support and tangible aid than healthcare providers (Yates, 1995). In a sample of 450 cancer patients, family members were identified as a source of informational support for over 75% the sample (Mills & Davidson, 2002).

Patients have also identified lack of available family support within the hospital setting (Paavilainen, Seppanen, & Asted-Kurki, 2001). A sample of 112 adult patients who underwent an urgent surgery in Finland answered questions about family-focused care. Results showed that ascertaining the patient's family situation and informing the family member chosen by the patient were not achieved systematically. In fact, less than half of the patients (44%) reported that they were asked about their family, and a little over half (55%) were asked which family member they wanted to be notified about admission to the hospital. The opportunity to visit the patient before the operation was

also offered to less than half of the families and in the end, only 21 patients were able to have a family member present when preparing for surgery. Investigators suggested that healthcare providers must not assume that adult patients prefer to be alone for the preoperative process. After all, lack of perceived family member support may have implications for increased patient distress.

Another investigation conducted with 193 Finnish patients after CABG elucidated a relationship between perceived support and anxiety (Koivula, Tarkka, Tarkka, Laippala, & Paunonen-Ilmonen, 2002). Perceived social support was measured by an investigator-developed tool while anxiety was measured by both the S-STAI and the Anxiety portion of the Hospital Anxiety and Depression scale (HAD-A). Support from next of kin was measured by one question asking whether a family member was available in hospital the day before surgery.

Patients who reported having received less emotional support reported higher levels of anxiety on the S-STAI ($p = .007$) and the HAD-A ($p = .031$). Significantly less anxiety was reported for males (S-STAI, $p = .034$; HAD-A, $p = .003$) and for those who were married (S-STAI, $p = .013$; HAD-A, $p = .029$). In contrast, women living alone reported anxiety more than twice as often on the S-STAI as did men. Findings suggested that less support was associated with increased anxiety.

The influence of social support was recently examined with a sample of 42 males and 42 females undergoing elective maxillofacial surgery (Krohne & Stangen, 2005). Perceived support was measured before surgery by an inventory of emotional and informational support. In general, women scored significantly higher on both emotional support ($t_{82} = 4.71, p < .001$) and informational support ($t_{82} = 3.79, p < .001$). Findings demonstrated that patients who scored higher on the social support measures showed

less anxiety, received lower doses of narcotics and had a shorter hospital stays. In fact, more perceived informational support was associated with less preoperative anxiety.

The connection between perceived availability of social support and emotional distress was found in 51 Hispanic women being treated for breast cancer (Alferi, Carver, Antoni, Weiss, & Duran, 2001). Participants were asked to rate family member support on short questionnaires before breast surgery, within 10 days after surgery and again at 3 months, 6 months and 12 months. Perceived social support was measured by 2 items on instrumental support and 2 items on emotional support. Distress was measured using a brief scale with alpha reliabilities from .66 to .85 consisting of descriptive adjectives about anxiety, depression and anger.

Hispanic women had higher distress ($t_{50} = 2.72, p < .01$) prior to breast surgery than after surgery. Higher distress scores preoperatively predicted less perceived instrumental support from women in the family post-operatively ($n = 40, r = -.35, p = .03$). Postoperative distress predicted less instrumental support from friends at 3 months ($n = 46, r = -.27, p = .06$), while distress at 6 months predicted less support from women family members at 1 year ($n = 36, r = -.42, p = .009$). Results indicated that higher distress predicted an erosion of subsequent family member support.

Findings confirmed a benefit from perceived support quite early in the cancer experience (i.e., before and immediately after surgery). Prior to surgery, instrumental support from a spouse ($n = 19, r = -.43, p = .05$) and emotional support from friends ($n = 44, r = -.30, p = .04$) predicted lower postoperative distress. Higher levels of distress were implicated for the Hispanic women of low socio-economic status. In addition, the reciprocal influences of distress on the erosion of perceived social support also has implications for family members under distress.

Family Function & Perceived Support

Family members may function as the patient's first line of support while simultaneously requiring support themselves. For example, a systematic review of 30 empirical studies was conducted to identify the needs of family members who accompanied a critically ill patient to the hospital (Redley, Beanland, & Botti, 2003). Key findings suggested that family members required as much support, communication, comfort and reassurance as the patient.

Preoperatively, family function and support has been documented in several classic studies. Satisfaction with family functioning (Family APGAR) was measured for 106 caregiving spouses prior to cardiac surgery (Rankin, 1988). Family function was significantly correlated between both the family member and the cardiac patient ($r = .23$, $p = .02$) with caregivers reporting lower satisfaction with family functioning than their respective partners. Spousal caregivers were largely female (79%) and reported significantly lower Family APGAR scores ($t_{104} = 2.34, p = .02$) than male caregivers. As with distress (Gilliss, 1984; Moser & Dracup, 2004), Rankin (1988) found that the relationships between Family APGAR scores appeared to be more a function of the family member role (i.e. family caregiver versus cardiac patient) than gender. In a smaller subset ($n = 46$) of caregivers, females reported less perceived support than males on the Social Support Scale ($t_{30} = 3.74, p < .001$). Over time, caregivers reported less support than patients at 1 month ($t_{78} = 5.71, p < .001$) and at 3 months ($t_{70} = 4.73, p < .001$). Findings indicated that family members in caregiving roles after cardiac surgery scored lower on both family function and perceived support than the respective patient.

Although not statistically significant by group, caregiving spouses were also shown to be consistently more distressed than the cardiac patient. However, for both

groups the highest level of mood disturbance as measured by the POMS was found preoperatively and declined over time. Even after 1-year follow-up, the spouses mood disturbance was still demonstrated to be higher than that of the respective patient (Rankin, 1992). Yet caregivers who perceived high levels of social support demonstrated lower levels of mood disturbance. More importantly, social support acted as a buffer to the effects of caregiving burden and, in turn, decreased mood disturbance in the spouse (Rankin & Monahan, 1991).

Findings concerning family function were also validated in findings from 66 caregiving spouses and prospective CABG and valve surgery patients (Gortner, Gilliss et al., 1988). Patients and their spouses were approached the day before surgery and completed the Family APGAR, family resources and marital satisfaction. Again, spouses reported preoperative Family APGAR scores that were lower but not significantly different from that of the patient. Again, spouses were largely female (80%) and scores remained consistently lower than the patient even at 3 and 6 months after surgery. In addition, spouses who were > 70 years of age (n = 9) had a greater decline in family function by 6 months (Gortner, Rankin, & Wolfe, 1988). Investigators concluded that surgery had a disorganizing impact on family functioning, particularly for spouses.

Family function and perceived support were also investigated in a longitudinal study of spousal adjustment after diagnosis for colon cancer (Northouse et al., 2000). Fifty-six patients and spouses were interviewed at the time of cancer diagnosis, 60 days after diagnosis and again at 1 year. Satisfaction with family functioning was measured by the Family APGAR, while perceived support was measured by an investigator-developed questionnaire and concurrent stress measured by the Smilkstein Stress Scale.

Overall, participants reported a decrease in satisfaction with family functioning and less perceived social support over time. Again, spouses reported less perceived support than the patient ($F_{1, 54} = 8.92, p < .004$). In addition, female spouses tended to report less social support than male spouses ($F_{1, 54} = 3.98, p = .052$). Findings were similar for levels of distress. Spouses reported significantly more emotional distress than the patient ($F_{1, 54} = 4.67, p < .040$) and regardless of role, females reported more emotional distress than males ($F_{1, 54} = 9.30, p = .004$). Significantly, findings supported less family function, less perceived support and more distress in spouses than in their respective partner with colorectal cancer.

Finally, family function was investigated with 48 adult patients newly diagnosed with cancer and 99 of their adult relatives (Edwards & Clarke, 2004). Family functioning was measured by the Family Relationships Index and the McMaster Family Assessment Device (FAD). As a dimension of FAD, the communication variable was significantly associated with S-STAI score, indicating that clear and direct verbal communication resulted in less anxiety. Again, high anxiety scores were found in those who were younger and female. Most importantly, results indicated that 15% of the variance in anxiety was accounted for by the family relationship index score after cancer diagnosis. Findings implicated that both communication and quality of relationships were related to anxiety and reinforced the notion that a cancer diagnosis may affect the whole family.

In summary, investigations have suggested a link between psychosocial distress, function and support. Corroborating investigations showed a significant correlation between higher patient anxiety and less perceived support (Koivula et al., 2002; Krohne & Stangen, 2005). Distress was highest for patients prior to surgery, and the greatest benefit of perceived support occurred early (i.e., directly before) the surgery (Alferi et al.,

2001). Classic investigations with spouses also confirmed preoperative emotional distress (Gortner, Gilliss et al., 1988; Northouse et al., 2000; Rankin, 1988) and that the caregiving spouse may be at higher risk for emotional disturbance than the cardiac patient (Rankin, 1992).

Several assumptions have emerged about family function and perceived support. First, female caregivers reported significantly lower satisfaction with family functioning scores (Gortner, Gilliss et al., 1988; Moser & Dracup, 2004; Northouse et al., 2000; Rankin, 1988). Second, female spouses reported less perceived support (Gortner, Gilliss et al., 1988; Moser & Dracup, 2004; Northouse et al., 2000; Rankin, 1988, 1992; Rankin & Monahan, 1991). In all cases, after diagnosis and surgery, there was a subsequent erosion of family function and perceived support over time (Alferi et al., 2001; Gortner, Gilliss et al., 1988; Rankin, 1988, 1992). Future implications suggest that family members who experience less satisfaction with family functioning and a lack of perceived support prior to surgery may have a diminished ability to provide support and experience psychological distress.

As a group, the literature reviewed has begun to build a foundation of knowledge regarding family members. However, an expansion of major concepts and descriptive characteristics about family members in the preoperative hospital setting is necessary. In order to identify families at risk for high anxiety, altered functioning and lack of support, further understanding of potential predictive variables will be required.

Conceptual Framework

To understand the nature and effects of anxiety, function and support, it is useful to explore how selected theories explain these major concepts. With attention to clarity and complexity, theories will be reviewed based upon conceptual definitions and

structural components. Finally, the appropriate application of each theoretical assumption will be used to construct a conceptual framework for family members in the preoperative period.

Anxiety

Examining the intensities and qualities of anxiety as an emotion offers a wealth of clinically relevant information about the psychological state of family members prior to surgery. Psychodynamic theory was one of the first to conceptualize a definition of anxiety. Freud (1936), considered the father of psychoanalysis, called attention to two potential sources of threat: the external world and a person's own internal impulses. Whenever real danger in the external world was consciously perceived as threatening, 'objective anxiety' occurred. Objective anxiety was synonymous with the concept of fear. Anxiety that was evoked by internal impulses was deemed 'neurotic anxiety'. Although Freud eloquently defined the concept of anxiety, his writings rarely referred to any specific evidence from clinical practice.

Bridging the gap between concept and practice, Janis (1974) conducted psychoanalytic interviews on 22 patients undergoing surgery and discovered several propositions about anxiety. First, that high preoperative anxiety was usually followed by high postoperative anxiety and emotional disturbance. Second, that low preoperative anxiety was usually followed by various forms of emotional upset, mainly taking the form of rage reactions and resentment toward hospital staff and third, that moderate preoperative anxiety was usually followed by an absence of postoperative anxiety or distress. By applying psychoanalytic technique, Janis hypothesized about anxiety reactions in surgical patients and implicated the surgical event as a situation of great vulnerability for the patient.

State-Trait Anxiety

Classic psychodynamic definitions of anxiety guided the construction of other conceptual frameworks. Charles Spielberger (1966) used the psychodynamic concepts of external-internal stimuli, objective-neurotic anxiety and defense mechanisms along with the fullness of cognitive appraisal to describe the anxiety response. Spielberger's first conceptual model was developed not as a theory of anxiety, but rather as a means to differentiate between anxiety experienced as an emotional state (objective anxiety) or as part of an underlying personality trait (neurotic anxiety). A conceptual model of state and trait anxiety is depicted in *Figure 1*.

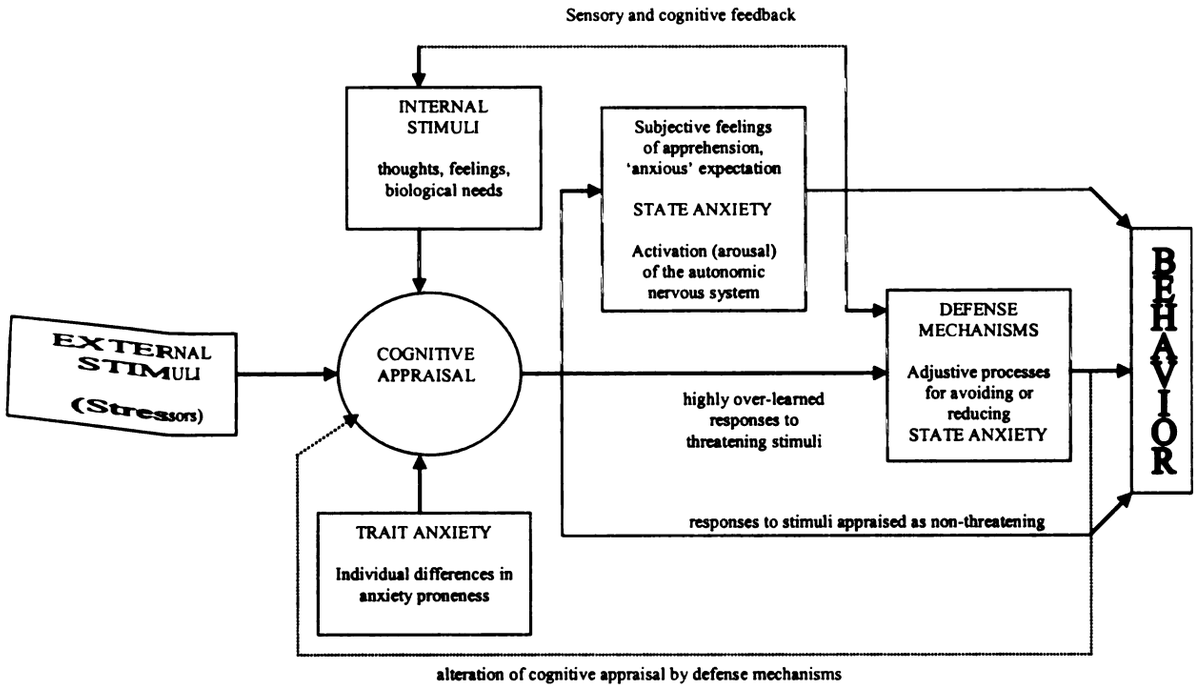


Figure 1. Conceptual model of state and trait anxiety.[1]

[1] Adapted from *Anxiety and Behavior* (p. 17), by C. Spielberger, 1966, New York: Academic Press. Copyright 1966 by Academic Press.

Spielberger (1966) posited two anxiety constructs independent of threatening stimuli, *state anxiety* and *trait anxiety*. The arousal of anxiety was initiated by either *external* or *internal* stimuli: any stimulus *appraised* as threatening would evoke a reaction and the intensity and duration of this reaction would be proportional to the amount of threat the situation posed for the individual. High levels of state anxiety were extremely unpleasant and motivated *behavior* designed to eliminate or reduce the anxiety (i.e., *defense mechanisms*). If defense mechanisms were successful, the stressor would be reappraised as less threatening, and a corresponding reduction in state anxiety would occur (Spielberger, 1986).

This conceptual model inspired the development the State-Trait Anxiety Inventory (STAI). One of the initial uses of this tool was to test emotional reactions of 26 white, middle-aged, male patients, 18 - 24 hours before major surgery, and again three to nine days after surgery (Spielberger, Auerbach, Wadsworth, Dunn, & Taulbee, 1973). Mean scores on the State portion of the STAI were much higher prior to surgery than after ($F_{1, 24} = 49.4, p < .001$). In contrast, mean scores on the Trait portion of the STAI remained essentially the same. Results indicated that the threat of imminent surgery produced elevations in anxiety as an emotional state, but did not affect anxiety proneness or trait.

The clarity of Spielberger's conceptual framework lies in its discrimination between the nature of state anxiety and trait anxiety. From derived psychodynamic concepts there is a consistency between relationships, yet the link with cognitive function lacks explanatory propositions. Therefore, the model remains less complex then other contemporary cognitive theories.

Transactional Model

A cognitive theory for surgical appraisal has been recognized in the Transactional Model of Stress and Coping developed by Lazarus and Folkman (1984). At the heart of this model are two processes: appraisal and coping. Appraisal is the evaluation of significance of a given event (i.e., surgery) and the adequacy of available resources (i.e., perceived support). Coping refers to the thoughts and behaviors used to regulate distress (emotion-focused coping) and manage the problem (problem-focused coping). Emotion (i.e., anxiety) is generated throughout the process of appraisal, coping, and event outcomes (Folkman & Greer, 2000). A graphic representation of the Transactional Model on Stress and Coping (Lerman & Glanz, 1997) is depicted in *Figure 2*.

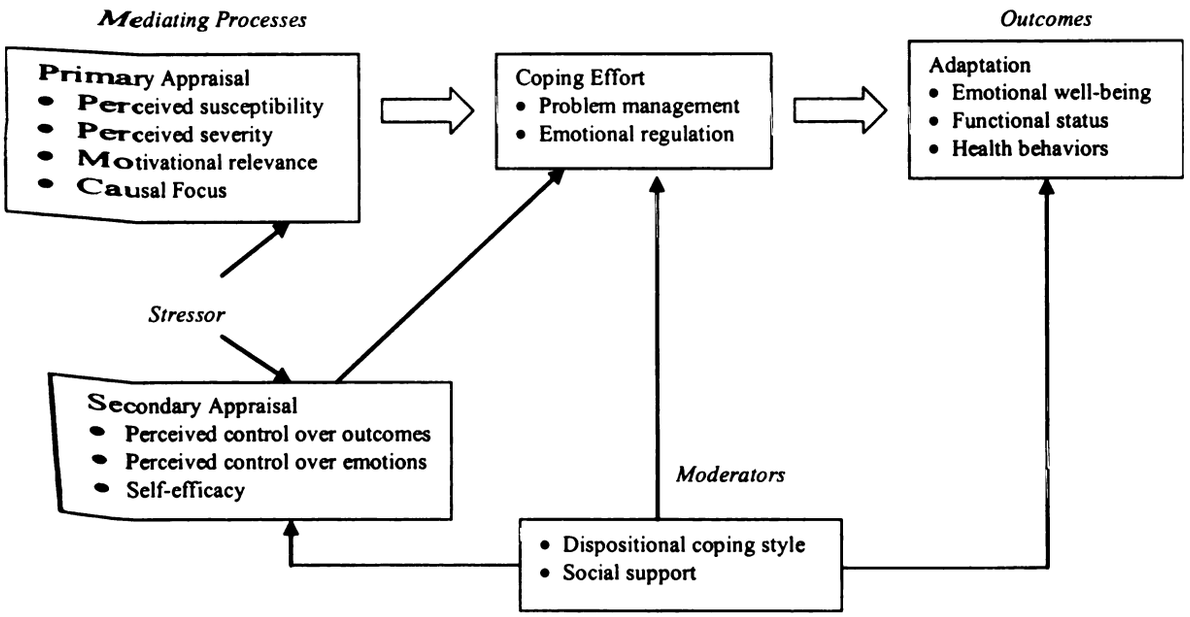


Figure 2. Diagram of the transactional model of stress and coping.[2]

[2] Adapted from "Stress, Coping and Health Behavior," by C. Lerman and K. Glanz in *Health Behavior and Health Education: Theory, Research, and Practice* (p.116), K. Glanz, F. M. Lewis & B. K. Rimer (Eds.), 1997, San Francisco, Jossey-Bass. Copyright 1997 by Jossey-Bass.

Of particular interest preoperatively is the appraisal process. This process is based on the assumption that the significance of a stressful event is not in the environment or the person, but in the relationship between the two (Lazarus & Folkman, 1984). Primary appraisal is influenced by personal beliefs, values and commitments. Secondary appraisal has to do with the extent to which the event can be changed or controlled. Together, primary and secondary appraisals determine the extent to which the surgery will be perceived as harmful, threatening, challenging or some combination of these (Folkman & Greer, 2000).

Anxiety could be derived from particular combinations of primary and secondary appraisals which generate emotion. According to Lazarus (1999), each emotion had an underlying core relational theme. With respect to anxiety, the core theme was related to facing uncertain, existential threat. Lazarus believed anxiety expressed danger to our ego identity, "who we are, where we are headed, and the ultimate loss of our ego identity in death, which is why anxiety is referred to as the existential emotion par excellence" (1999, p. 235).

A patient study based on stress and coping theory highlighted the impact of family distress upon the appraisal of the cancer experience (Bowman, Deimling, Smergilia, Sage, & Kahana, 2003). In cross-sectional design, 321 patients over the age of 60 were interviewed with a series of investigator-developed questionnaires after surviving breast, colorectal or prostate cancer. Results of multivariate hierarchical regression showed older adults ($\beta = -.19, p = .001$) and African Americans ($\beta = -.05, p = .007$) reported a less 'stressful' appraisal of cancer experiences.

Of interest, greater family member distress was related to a more 'stressful' appraisal by the patient ($\beta = .32, p = .001$). Investigators explained the results by

suggesting that if patients perceived distress in family members, they became more distressed themselves. Although, Lazarus and Folkman (1984) had previously underscored the importance of 'personal beliefs' influencing appraisal, a significant contribution of this study was to expand the role of 'personal beliefs' to include beliefs about the effect of cancer on the family.

The Transactional Model can be evaluated in terms of clarity, consistency and complexity. Although the concepts of stress, appraisal and coping are familiar and clear, the model appears to be a poor predictor of how severe 'stress' will be or how long it will last. In other words, measuring anxiety as an emotion seems more quantifiable than measuring a multidimensional concept like stress. There is also a lack of consistency with how anxiety may impact cognitive appraisal. Lazarus (1999) was careful not to imply a cause and effect model of emotion by stating, "there would be no point in considering an appraisal as an antecedent cause of emotion because it and the emotion are part and parcel of the same phenomenon" (p. 99) yet, Lazarus again separates the two, "Emotions are not appraisals, but a complex organized system consisting of thoughts, beliefs, motives, meanings and subjective bodily experiences and physiological states" (p. 100). Certainly, the Transactional Model remains complex within the construct of anxiety and appraisal. Not all surgery is appraised as equal: some want surgery, while others don't; some initiate surgery, while others are surprised; for some it is a first surgery, while for others it is the fifth. According to Lazarus (1986), some events are perceived as more central to the person, hence more important to health outcome, while others are peripheral and of little relevance to overall health and considered hassles.

The complexity of cognitive appraisal within the Transactional Model can be easily adapted to the relevant perceptions about surgeries for individual family members.

Family Function

Core functions of the family include sustaining relationships and maintaining health among its members (Lewis, 2004). Dealing with an upcoming surgery may involve reorganizing family routines, managing symptoms and planning for care. Preoperatively, family function may include reconfiguring, stabilizing, protecting and nurturing family relationships while savoring time together. In terms of emotion, the most important function includes creating ways for members to safely express feelings and cognitively process the changes that may be brought about by surgery.

Based on definitions from social science, Smilkstein (1978) described key components of family function. Adaptation included the helpful behaviors of family members when resources were needed. Partnership was mutual communication and problem-solving. Growth referred to the maturation and development of each family member and adaptation to new roles. Affection encompassed emotional interaction and intimacy. Resolve was characterized by sharing family time. However, the dilemma with the definitions was clarity, as functions within each category tended to overlap.

Thus, the theoretical use of family function has developed in a variety of ways. Although some frameworks within empirical research have proposed mediating variables between family function and emotion, evidence suggests a more direct relationship. Similar to anxiety, research with depression used stress, appraisal and coping theory (Lewis & Hammond, 1996; Lewis, Hammond, & Woods, 1993). The model for the study proposed that the impact of depression on family functioning was mediated through other variables (i.e., family coping, marital adjustment, and parent-child relations). As hypothesized, depressed family members would be unable to engage in interpersonal exchanges within the household. Lack of engagement would impinge upon the families'

coping behavior and marital adjustment and alterations in these mediating variables would, in turn, affect family functioning. While the impact of depression on family functioning was thought to be mediated, Lewis, Hammond and Woods (1993) provided empirical evidence for a direct relationship between depression and family functioning for patients with breast cancer ($r = -.44$, $p < .01$) and their partners ($r = -.47$, $p < .01$).

Northouse, et al. (2000, 2002) also proposed a theoretical model incorporating family function using stress and coping theory. Family function was associated with distress via mediation through cognitive appraisal. Although there was evidence that the family's quality of life was mediated through cognitive appraisal, there was also a significant relationship between negative appraisal of caregiving, hopelessness and uncertainty related to family function in relatives of patients (Northouse, Mood et al., 2002; Northouse et al., 2000).

Perceived Support

Of interest prior to surgery is the support process from the family, which identifies the actual and perceived availability of resources. The support process is defined within the constructs of perceived support, received support, and functional support. Perceived support is based upon the appraisal that support is available if needed (Cohen et al., 2000). For example, even the mere anticipation of support has been shown to reduce stress (Sarason, Sarason, Brock, & Pierce, 1996). Received support is defined as what has actually been provided (Cohen et al., 2000). Finally, functional support is defined as aid and assistance exchanged through social relationships and interpersonal transactions (House, 1981). Functional support may be qualified by one or more of the following categories: emotional, instrumental, informational or appraisal support as defined in Table 1.

Table 1

Types of Functional Support

Concept	Definition
Emotional Support	The provision of empathy, encouragement, understanding, caring, love, and trust.
Instrumental Support	The provision of tangible aid and services that directly assist a person in need, financial assistance, labor, tasks, the gift of time and direct intervention.
Informational Support	The provision of advice, suggestions, directives and information communicated directly that a person could use to facilitate coping and stress resistance.
Appraisal Support	The provision of information that is useful for self-evaluation purposes, constructive feedback, affirmation, and social comparison rather than problem solving.

Stress Buffering

Social support has been described as a moderator or 'buffer' for stress (Lazarus & Folkman, 1984). The most influential theoretical perspective on social support was the 'stress-buffering' hypothesis (Cohen & Willis, 1985). More than 40 correlational studies were reviewed with the major assumption that social support reduced the effects of stressful life events on health through either the belief that support was available, or by the actual supportive actions of others. Consistent evidence for stress-buffering was found among studies in which the social support measure assessed the perceived availability of social resources 'matched' the needs elicited by the stressful event (Cohen, Underwood & Gottlieb, 2000).

Perceived support and psychological distress was evaluated in 574 breast or prostate cancer patients and spouses (Baider, Ever-Hadani, Goldzweig, Wygoda, & Peretz, 2003). Self-report questionnaires measured Perceived Social Support from Family

(PSS-Fa) and psychological distress using the Brief Symptom Inventory (BSI). Couples who reported lower levels of perceived family support experienced higher levels of distress on the BSI. Findings supported the notion that perceived family support was negatively associated with psychological distress in both patients and spouses.

Lazarus and Folkman (1984) treated social support as an environmental resource which should be cultivated and used. Several assumptions were made about support influencing the process of appraisal. First, that information provided by others can directly influence primary appraisal (i.e., the surgery may be appraised as more serious than it really is). Second, that social support plays a major role in secondary appraisal when resources are perceived as available. In other words, families may render assistance with finances, transportation, companionship at hospital visits and provide reinforcement of presurgical information. The family can provide vital resources, which all members can draw upon prior to surgery, and it is obvious individuals can gain sustenance and support from those closest to them (Lazarus & Folkman, 1984). What remains less obvious however, is how this works.

An underlying assumption may be that having a family is equivalent to getting support from them, yet the family should never be considered a panacea for all stress. In fact, according to Lazarus (1986), our relationships with others may comprise the most significant source of stress in life. A review of social support literature has presented empirical evidence of social negativity, which have been referred to as: social hindrance, strain, conflict and undermining (Finch, Okun, Pool, & Ruehlman, 1999).

Despite widespread confidence in the benefits of family support, there has been a considerable lack of information concerning the preoperative period. Family members may find giving support draining, which contributes to depletion of resources, exhaustion

and despair (Thompson & Ontai, 2000). Unfortunately, those who are overwhelmed in the presurgical environment, might lack the time and energy to seek support for themselves. In fact, family caregivers often perceive deterioration of supportive relationships (Alferi et al., 2001; Gortner, Gilliss et al., 1988; Rankin, 1988, 1992), and may feel they are giving more support than they receive. Within the preoperative environment, family members may perceive a lack of support and alteration in family function when confronted with a variety of situational stressors.

Self-Reported Stressors

The concept of 'stress' has been called ambiguous. As the dictionary suggests, stress may be used to designate both the external force applied to an object and the effect of that force (Kahn, 1986). In other words, stress may represent either the stimulus, or the response. Instead, the term 'stressor' has been used to designate the stimulus event, and refers to the self-identified environmental conditions which will require appraisal.

The first controversial approach to investigating the stressors of life was described by Holmes and Rahe (1967). Subjects were asked to retrospectively rate common life events that had occurred over the past year. Social readjustment to stressors was then rated on a scale of 0 to 100 with the top 20 life events presented in Table 2. Findings demonstrated a positive relationship between higher scores and a range of reported illnesses. The definition of illness was questioned, as health associated with high scores included everything from infections to random accidents. Even vague psychological complaints were included in the illness category. Results were also criticized, as both positive and negative stressors were associated with poor health (Lazarus, 1976). Finally, life events which required social readjustment were reported retrospectively from respondents and not at the time the stressor was originally encountered.

Table 2

Top 20 Life Events

RANK	LIFE EVENT	MEAN VALUE
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail term	63
6	Personal injury or illness	53
7	Marriage	50
8	Fired at work	47
9	Marital reconciliation	45
10	Retirement	45
11	Change in health of family member	44
12	Pregnancy	40
13	Sex difficulties	39
14	Gain of new family member	39
15	Business readjustment	39
16	Change in financial state	38
17	Death of a close friend	37
18	Change to different line of work	36
19	Change in number of arguments with spouse	35
20	Mortgage over $10,000	31

Even though Holmes and Rahe (1967) ranked change in the health of a family member in the 11th position, current research has elucidated more specific stressors when families are faced with surgeries. Although most research centers on specific surgeries, qualitative themes presented have been more generalizable for presurgical investigations. For example, preoperative interviews were conducted with 34 male patients and female spouses before radical prostatectomy (Gray, Fitch, Phillips, Labrecque, & Klotz, 1999). Stressors identified by couples in the presurgical period included: (a) the process and outcomes of the surgery, (b) being in the hospital, (c) postoperative complications, and (d) the long-term impact of the disease/treatment on the couples' marital relationship. Instead of identifying global stressors, this qualitative study focused upon the patients' hospitalization, surgical outcomes and the future impact on the family.

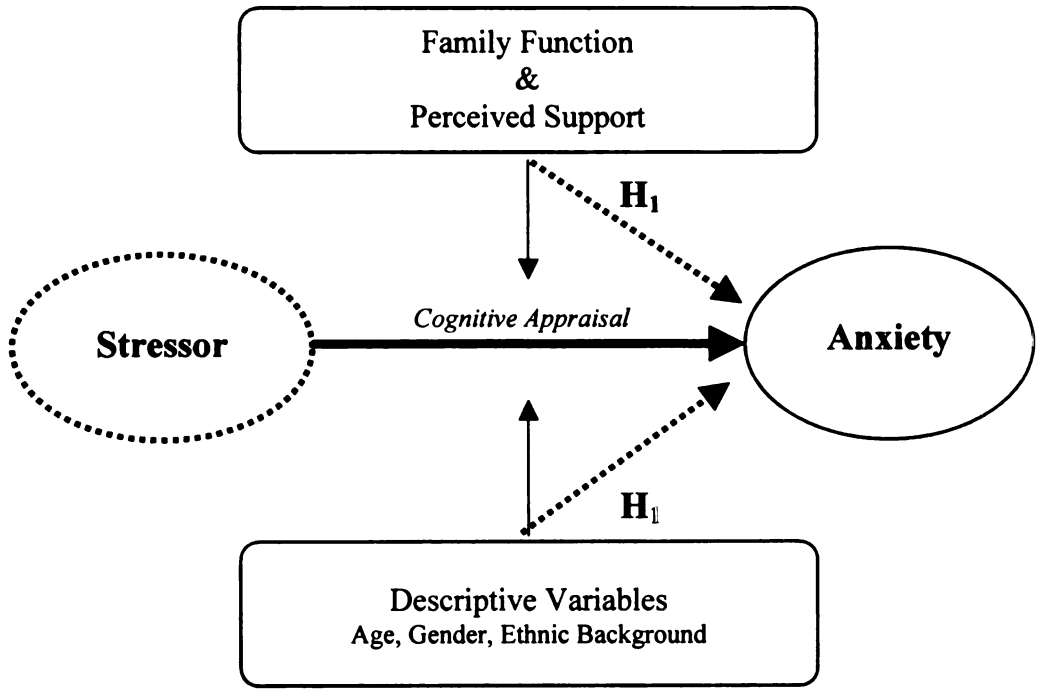
Postoperative qualitative interviews conducted with family members after craniotomy also identified more specific stressors (Wideheim, Edvardsson, Pahlson, & Ahlstrom, 2002). Five family members living with a patient with a malignant brain tumor discussed postoperative stress which included: (a) recognition of death (b) fear and anxiety (c) burden (d) support (e) returning to a normal life (f) prevention of ill health (g) hope and (h) coping with grief. Similar to the preoperative investigation, results indicated that the same emotions and stressors occur postoperatively, with anxiety and the fear of the patients' death constituting the strongest remaining themes in the narratives.

Conceptual Model

A conceptual model has been developed for family members prior to surgery (see *Figure 3*). The *stressor* is the variable that requires cognitive appraisal by each family member (Folkman & Greer, 2000). Social support is considered a moderating variable (Lazarus & Folkman, 1984), in this model both *perceived support* and *family function* are positioned as moderators. Moderating variables affect the direction and or strength of the relationship between an independent (predictor) and a dependent (criterion) variable (Baron & Kenny, 1986). It is important to note that moderating variables always function as independent variables, whereas mediating variables may shift positions from effects to causes, depending on the focus of analysis. The dependent variable in the model was family member *anxiety*.

Descriptive variables are personal characteristics which may influence anxiety. Characteristics of the family member include *age*, *gender* and *ethnic background*. For example, age, gender or ethnic background may influence the way in which the family member may freely express anxiety or keep it hidden. Other descriptive variables include

family member role, living situation, educational and socioeconomic level. Prior experience with surgery may also influence presurgical anxiety (Kindler et al., 2000). Negative experiences, in particular, may create more anxiety each time another surgery is encountered. One might also expect to find some consistent variations according to other characteristics associated with differences in cultural beliefs and religion (Flannelly, Ellison, & Strock, 2004; Shreve-Neiger & Edelstein, 2004).



Other Descriptive Variables Measured

Marital Status
Family Member Role
Living with Surgical Patient
Number of People in the Household
Distance in Miles from the Hospital
Educational Level
Employment Status
Annual Household Income
Religious Affiliation
Surgical Experience
Surgical Severity
Type of Surgery

Figure 3. Conceptual framework for family members prior to surgery.

Research Assumptions

Underlying assumptions of this investigation have been gathered from relevant research and are presented in Table 3. An attempt has been made to pull together fragments of information found within the literature surrounding surgery to construct meaningful relationships. However, more descriptive research will be needed in order to isolate other variables which fully characterize family members.

Table 3

Research Assumptions

Assumptions	Source
1. Family members experience preoperative anxiety.	(Kain, Mayes, Wang et al., 2000; Kain, Mayes, Weisman et al., 2000; Northouse et al., 2000; Rankin, 1988, 1992; Wang et al., 2004)
2. Satisfaction with family function is related to anxiety.	(Edwards & Clarke, 2004; Northouse, Mood et al., 2002; Northouse et al., 2000)
3. Perceived social support can buffer anxiety.	(Baider et al., 2003; Cohen & Willis, 1985; Koivula et al., 2002; Krohne & Stangen, 2005)
4. Individuals who are younger will report more anxiety.	(Chan & Molassiotis, 2002; Edwards & Clarke, 2004; Kindler et al., 2000; Wang et al., 2004)
5. Females will report more anxiety.	(Chan & Molassiotis, 2002; Edwards & Clarke, 2004; Kindler et al., 2000; Krohne & Stangen, 2005; Messeri et al., 2004; Northouse et al., 2000; Wang et al., 2004)
6. Those of non-White ethnic background will report a wider variation in anxiety.	(Alferi et al., 2001; Bowman et al., 2003; Chan & Molassiotis, 2002; Messeri et al., 2004)

Aims and Hypothesis

The research question was stated as, "What is the relationship between family member anxiety, satisfaction with family functioning and perceived social support from the family prior to surgery?" The primary aim of this study was to predict levels of family member anxiety in relation to satisfaction with family functioning, perceived social support from family and descriptive variables prior to surgery. A second aim was to explicate what is most stressful for family members prior to surgery. The hypothesis has been stated that family member anxiety is negatively related to satisfaction with family functioning, perceived social support from family and age. Females and those of non-White ethnic background (e.g., Asians and Hispanics) are expected to have more anxiety prior to surgery.

Definition of Terms

Definitions of key variables under study are presented in Table 4.

Table 4

Definitions of Variables

Variable	**Definition**
Anxiety	Anxiety is the primary emotional reaction to the appraisal of threat. An anxiety state consists of feelings of tension, apprehension, nervousness and worry. State anxiety may vary from mild apprehension to intense fear and panic (Spielberger, 1986).
Family Function	The family is defined as two or more persons who are joined together by bonds of sharing and emotional closeness and who identify themselves as a family (Friedman et al., 2003). Optimal function promotes the emotional and physical growth and maturation of all family members. Family function encompasses five purposes: affection, socialization, adaptation, growth, and resolve (Smilkstein, 1978).

Table 4 (*continued*)

Perceived Support	Perceived support is based upon the appraisal that support is available if needed (Cohen et al., 2000). The extent to which an individual believes their need for support, information, and feedback will be fulfilled (Procidano & Heller, 1983).
Self-Reported Stressors	A stressor is any self-identified environmental condition, situation, stimulus or strain which requires appraisal and may be perceived as potentially harmful, dangerous, or frustrating.

Descriptive Variable	**Definition**
Age	Identification in number of years as reported by birthdate.
Gender	Self identification of the sex of the family member as either masculine or feminine.
Marital Status	Distinction of a partnered or unpartnered status with another individual as defined by a legal connection of marriage or an understanding of union.
Ethnic Background	A variable that reflects the individual's association with the ethnic group with which they most closely identify. Categories include both racial and national-origin groups and are sociopolitical constructs, not to be interpreted as scientific or anthropological in nature.
Family Member Role	The position held in the family in relation to the patient undergoing surgery.
Live with Patient	Residing in the same household as the patient undergoing surgery.
Number in Household	Number of individuals residing with the family member.
Miles from Hospital	The distance in miles from the family member's residence to the hospital.
Education	The highest level of training or schooling completed and obtained in established stages.
Employment	Self identification within an active occupation or profession associated with compensation.
Annual Household Income	Self report of yearly household earnings before taxation.

Table 4 (*continued*)

Religious Affiliation	Identification with a specific unified system of beliefs and convictions associated with a supernatural power.
Surgical Experience	Individual judgment based on good, bad or no prior knowledge or participation in a prior surgical procedure.
Surgical Severity	A description of high, medium or low intensity of surgery based upon the anticipated length of the procedure and estimated length of hospital stay.
Type of Surgery	The given name and description of a surgical procedure which can be further categorized based upon anatomical location or nature of surgery.

CHAPTER III: METHODOLOGY

This study was approached with the understanding that a description of the family member experience should be undertaken before further interventional studies were warranted. The intensity of anxiety, satisfaction with family function and perceived support needed to be quantified, and qualitative information about subjective 'stressors' identified by family members. Inherent components in the methodological design will included a full description of the research setting, criteria for sample selection, measurement tools, data collection procedures and an analysis plan.

Research Design

A descriptive correlational study design was selected to examine major variables under study. A prospective, cross-sectional design ensured that variables reflect current responses in the preoperative moment. Although multi-interventional designs have been popular in preoperative patient research, the family member experience first deserved a descriptive assessment.

Description of Setting

This investigation was conducted at two preoperative evaluation sites at a University-affiliated hospital. Presurgical evaluation clinics were managed by the Department of Nursing in collaboration with the Department of Anesthesia and Perioperative Services. Healthcare providers (physicians, nurse practitioners) medically screened any patient requiring anesthetics for surgical, radiological and diagnostic procedures. The primary function of the preoperative evaluation program was to take a medical history and perform a physical examination specific to the safe delivery of anesthetics. The primary purpose of the preoperative evaluation was to determine a patient's readiness for surgery/anesthesia, as well as to educate and inform the patient

regarding the operative experience, plans for perioperative risk reduction, postoperative recovery and pain analgesia. All patients screened were undergoing elective procedures.

Approximately 75% of all patients undergoing surgery were evaluated at a preoperative hospital visit and it was estimated that approximately 50% of patients were accompanied by a family member. Types of procedures varied by site and by surgeon. Site 1 specialized in cardiovascular, pulmonary, gastrointestinal, head and neck, neurosurgical, orthopedic, urologic/genital, general and plastic surgeries. Site 2 was considered a comprehensive cancer center with procedures geared toward gastro-intestinal, gynecological, urologic, head and neck and skin cancers. Both sites have outpatient surgery centers which perform simple same day procedures and evaluations under anesthetics. Average daily patient census for the preoperative preparation program at site 1 was 50 patients per day, while site 2 had approximately 20 patients per day. Since site 1 had about 40% more procedures performed per day, 80% of the family member questionnaires were collected at site 1 while 20% of the questionnaires were collected at site 2.

Criteria for Sample Selection

Human Subjects Assurance

Prior to the initiation of research protocol, Human Subjects Committee Review approval was obtained through the institution's Committee on Human Research (CHR). A letter of support obtained from each hospital based recruitment site was signed by the clinic medical director, nursing supervisor and administrative manager. Informational study sheets along with family member questionnaires were approved by the CHR. Family member questionnaires were available in three languages: English (Appendix A) Spanish (Appendix B) and Chinese (Appendix C).

Sample Size

To determine sample size, a statistical power analysis was calculated using the computer software program N-Query™. A multiple linear regression model included 17 variables: (1) S-STAI score, (2) Family APGAR score, (3) PSS-Fa score, (4) Age, (5) Gender, (6) Marital Status, (7) Ethnic Background, (8) Family Member Role, (9) Live with Patient, (10) Number in Household, (11) Miles from Hospital, (12) Education, (13) Employment, (14) Annual Household Income, (15) Religious Affiliation, (16) Prior Surgical Experience and (17) Surgical Severity. With a squared multiple correlation R^2 of 0.26, an estimated sample size of $N = 232$ would have 80% power to detect at $\alpha = .05$. Because there were multiple predictors selected for anxiety, a large sample size was required. The study was not only correlational, but intended to include a multiple regression analysis to understand the relationship between a very large list of independent variables and the dependent outcome.

Sample Selection

Convenience sampling, a non-probability sampling technique, was used to recruit the most readily available target population of family members before surgery. Any family member who accompanied a patient to a preoperative clinic appointment was eligible to participate in the study. The definition of a family member was any person who was related biologically, emotionally or legally to the patient. Hence, a same sex partner or a close friend although not biologically related, would be considered emotionally related and therefore could participate in the study if they chose to do so. It is important to note, that only one adult family member per patient was asked to complete a questionnaire.

Inclusion criteria for the family member included: adults over 18 years of age, ability to read in English, Spanish or Chinese, and ability to mark on the questionnaire with pen or pencil. Those who would be excluded from the study would be family members under the age of 18 and any 'non-family member' who was not related biologically, emotionally or legally (e.g., someone simply transporting the patient to the hospital).

Accrual rate for family members was approximately 15 subjects per day. Data collection was stopped at 6 weeks or at 30 working days. An accrual of 450 questionnaires was attempted, with a total of 437 questionnaires actually accrued. Eighty-seven questionnaires were omitted for missing data or if accidentally completed by the surgical patient.

Data Collection and Measurement

Data collection was conducted by self-report on a family member questionnaire. The questionnaire was composed of three psychometric instruments, one open-ended item, and background questions which requested demographic information. Different types of measurements within the questionnaire have been identified in Table 5. Each major instrument will be described, scrutinized for reliability and validity, and analyzed for appropriateness in the preoperative setting.

Table 5

Measurement Tools

Domain	**Measurement Tools**
Anxiety	State Portion of the State Trait Anxiety Inventory (**S-STAI**)
Family Function	Satisfaction with Family Functioning (Family **APGAR**)
Perceived Support	Perceived Social Support from Family (**PSS-Fa**)
Self-Reported Stressors	Open-Ended Statement
Descriptive Characteristics	Background Questions

Measurement of Anxiety

The aim of any measure of anxiety is to adequately capture emotion within the moment. Everyone feels anxious, but substantial differences occur among people in the frequency and intensity that such emotions are experienced (Spielberger, 1986). The State portion of the State-Trait Anxiety Inventory (S-STAI) was developed in 1964 by professor of psychology, Charles Spielberger, as a self-report instrument to assess anxiety in college students. The original intent of the instrument was to develop a set of items that could be used to differentiate state or trait anxiety. State anxiety is defined as a transitory emotional state that varies in intensity over time. Trait anxiety is defined as a relatively stable characteristic that predisposes an individual to assess a variety of situations as either benign or threatening.

The S-STAI consists of 20 short statements that take about 5 minutes to complete using paper and pencil. Examinees mark the answer that best describes the intensity of their present feelings in Likert-format: (1) not at all (2) somewhat (3) moderately so, and (4) very much so. Scores may range from a minimum of 20 to a maximum of 80 with higher scores indicating more anxiety. Ten of the anxiety-absent items are reversed scored. The means established for working adults are 35.72 ± *10.40 SD* for men (n = 1,387) and 35.20 ± *10.61 SD* for women (n = 451). The means established for male and female medical surgical patients is 42.68 ± *13.76 SD* (Spielberger, 1983).

Normative samples included over 6,000 working adults, college students, high school students, military recruits, outpatient psychiatric patients, medical, surgical and dental patients. Testing was performed on those with a seventh grade educational level or higher. Spielberger (1985) reported reliability as an internal consistency score above .90 for working adults, students, and military recruits. The test-retest correlations for the

S-STAI scales for college and high school students were low with a range from .16 to .62 with a reliability coefficient of .33. Even though a coefficient of ≥ |.70| is preferred (Polit & Hungler, 1999). Spielberger (1985) explained the value of .33 as a reflection of anxiety as a transitory emotional state that would not remain stable on retesting.

Two parallel forms of the S-STAI established reliability in the form of equivalence. The first original form, Form X was correlated to Form Y (r = .96) which was developed over a ten-year period of time (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1989). The main rationale for these alternate forms was first: to distinguish more clearly between anxiety and depression, second, to support a shift in English idiom and third, to improve the structure balance between anxiety-present and anxiety-absent items. A factor analysis showed higher loading of four factors, items more independent of depression, and a higher reliability for Form Y (α = .92) than for Form X (α = .87).

The S-STAI was evaluated for content validity on a variety of contrast groups, including undergraduate psychology majors who reviewed each item before commenting in detail on content and test format. Concurrent, construct, convergent and divergent validity were performed on Form X. Instruments like the Institute for Personality and Ability Testing, the Taylor Manifest Anxiety Scale, and the Zuckerman Multiple Affect Adjective Checklist were correlated for concurrent validity. Construct validity was observed in the higher scores of military recruits tested shortly after stressful training in comparison to college/high school students under normal conditions. In addition, the S-STAI scores of college students were significantly higher under examination conditions and significantly lower after relaxation training. Convergent and divergent validity were presented for Form X with different domains of the Minnesota Multiphasic Personality

Inventory (r = -.64 to .79), Cornell Medical Index (r = .70) and the U.S. Army Beta intelligence test (r = -.08) from a group of male neuropsychiatric patients.

Correlations between the S-STAI and Trait portion of the State Trait Anxiety Inventory (T-STAI) were performed on working adults, students and military recruits with a median correlation for seven samples of .65. Results were dependent upon the type of stress associated with the conditions under which the scale was administered (Spielberger, 1983). Normative subjects who score high on T-STAI tend to be higher on S-STAI even in relatively neutral situations. In general, Spielberger found the T-STAI predicted higher correlations between S-STAI in social evaluative situations (e.g., personal adequacy/self-esteem) and lower correlations in situations of physical danger.

Sensitivity of the S-STAI to surgical stress has been repeatedly demonstrated in prior research. Spielberger et al., (1973) found scores on the S-STAI rose prior to surgery and declined as patients recuperated. In contrast, scores on the T-STAI essentially remained the same before and after surgery. The intent of current interventional studies is to reflect the most significant change in anxiety levels before and after interventions. For this reason the S-STAI remains more utilized than the T-STAI. Furthermore, empirical studies that utilize the S-STAI can be readily compared to others in the same field.

The S-STAI is available in English, Chinese and Spanish. Internal consistency for the English version has been reported with coefficients ranging from .85 to .95. The Cronbach's alpha for the English version of the S-STAI in this project was .95 (n = 320). The Chinese State Trait Anxiety Inventory (C-STAI) has an internal consistency of .90 for the state portion (Mu, Ma, Hwang, & Chao, 2002). The internal consistency of the Chinese version in this project was .95, although not legitimate to report because of the small number of respondents (n = 5). The Spanish version of the S-STAI was tested with

adult samples from the general adult population with KR-20 coefficients ranging between .92 and .93 for the state subscale (Rosa, Olivares, & Sanchez, 1998). The internal consistency of the Spanish version in this project was .92, although again not considered legitimate to report due to small sample size (n = 25).

Measurement of Family Function

The Family APGAR is a structural-functional screening tool to provide information on the satisfaction of family functioning. The tool is based on five components of family functioning from social science: (a) Adaptation (satisfaction with the assistance received when family resources are needed); (b) Partnership (satisfaction with mutuality in family communication and problem-solving); (c) Growth (satisfaction to change roles and attain emotional growth or maturation); (d) Affection (satisfaction with intimacy and emotional interaction); and (e) Resolve (satisfaction with the way time is shared) (Smilkstein, 1978).

The Family APGAR consists of five short statements that can be answered in about 2 minutes. The instrument is scored on a 5-point scale, scored for research purposes from 0 – 4, ranging from "never" to "always". None of the statements are negative and reversed scoring is not necessary. Total scores range from 0 to 20. A score of 13→20 suggests high satisfaction, a score of 7→12 suggests moderate satisfaction and a score of 0→6 suggests extremely low satisfaction with family functioning.

Normative samples included college students both separated and living with parents and adopted and biological children. The tool can be used for subjects over 10 years old. Internal consistency has been reported at .86 for the Family APGAR. Inter-item correlation ranged from r = .46 to .64, and split-half reliability index was reported at

r = .93. Test-retest correlation was performed over two weeks with 100 students and was reported at r = .83. Construct validity was achieved with the Family Functioning Index (r = .80) and correlation with observations from family therapists (Good, Smilkstein, Good, Shaffer, & Arons, 1979). Criterion validity was demonstrated with significantly lower scores from adopted children and students separated from parents (Smilkstein, Ashworth, & Montano, 1982).

The family APGAR is available in English, Chinese and Spanish. Internal consistency for the English version has been reported at .86. The Cronbach's alpha for the English version of the S-STAI in this project was .91 (n = 320). The Family APGAR – "Chinese" is a translated version of Smilkstein's measure (Hahn & Di Petro, 2001) found to have excellent test-retest reliability. Although not legitimate to report the Cronbach's alpha for such a small number of respondents (n = 5), the internal consistency of the Chinese version in this project was .97. The Family APGAR – "Spanish" has also been utilized (Tiet et al., 1998) but reliability was not noted. In this project the internal consistency of the Spanish version of the family APGAR was .90.

Measurement of Perceived Support

The aim of selecting an instrument of social support was to measure the family members' perception of available support. A meta-analysis of 42 studies (Finch et al., 1999) suggested the perception that 'support is available' is related more strongly to emotional functioning than either the 'receipt of support' or 'structural measures' (i.e., counts of support providers). The Perceived Social Support from Family (PSS-Fa) was developed by two psychologists, Procidano and Heller (1983). Perceived support scales were based on the theoretical framework of Caplan in 1974. Inherent in this perspective is that if networks provide support, information, and feedback, then perceived social

support can be operationally defined as the extent to which an individual believes that his or her needs for support, information, and feedback are fulfilled.

The PSS-Fa consists of 20 declarative statements to which the respondent answers 'yes' (1), 'no' (0), or 'don't know'. For each of the 20 items, the response indicative of perceived social support is scored as + 1, so that scores can range from 0 (i.e., no perceived social support) to 20 (i.e., maximum perceived support). The 'don't know' category is not scored. There are five reversed scored items for the PSS-Fa. The instrument is administered by paper and pencil and takes approximately 5 minutes to complete and is designed for subjects with a high school education or greater.

The PSS-Fa was tested on undergraduate college students ($N = 222$) with a Cronbach's alpha = .90. The original set of 35 items which constituted the preliminary version of the Perceived Social Support measure was found to possess both a high test-retest reliability of $r = .83$ over a 1-month interval with an internal consistency of $\alpha = .90$. Equivalence testing was not noted.

Content and criterion validity were not described. Sampling domains were generated with an original pool of 84 items to reflect instances of provision of support, information or feedback, as well as some instances of support reciprocity (i.e., provision of support by the individual). An original set of 35 items was selected according the highest correlations between the item and the scale total and then reduced to 20 items.

The scale was found to measure a valid construct that was significantly and negatively related to Langner Symptom Scores ($r = -.29, p < .01$). The PSS was a better predictor of symptomatology than the Life Events Scale or Social Network Questionnaire (SNQ). While it is possible that perceived support 'buffers' or protects an individual from

the adverse effects of stress, equally plausible is the possibility that symptomatic individuals simply perceive less support (Procidano & Heller, 1983).

Anxiety was investigated as a function of PPS-Fa and was tested against the S-STAI on subjects waiting to make a self-disclosing speech (Procidano & Heller, 1983). Results showed that state anxiety was more a function of the companion with whom the subject waited, rather than his or her prior levels of perceived social support. Specifically, the study suggested that the speaker would show less external anxiety in the presence of a friend ($M = 38.72$) as compared to a family member ($M = 40.45$, $F_{2, 91} = 2.61$, $p < .08$), implicating that subjects would rather appear less anxious in front of non-family members.

The PSS-Fa is available in English, but Chinese and Spanish versions were not located prior to the initiation of the project. Chinese and Spanish versions of the PSS-Fa were translated and back-translated by three native-speaking translators for each tool prior to use. The English version of the PSS-Fa was reported to have a Cronbach's alpha of .90. The internal consistency for the PSS-Fa in this project was .89 ($n = 320$). Although not legitimate due to small sample size, the internal consistency of the Chinese version was .91 ($n = 5$) and Spanish version was .84 ($n = 25$).

Measurement of Self-Reported Stressors

One open-ended statement requested that the participant respond in writing to: "Please list at least three things that have been most stressful for you before this surgery. Circle the most important." Chinese and Spanish versions of the open-ended statement were translated and back-translated by three native interpreters for each version prior to use. Responses to the open-ended statement were also translated into English for use in the qualitative analysis.

Measurement of Descriptive Variables

Descriptive background questions (BQ) developed by the investigator gathered information on the family members' age, gender, marital status, ethnic background, family member role, whether they were living with the person having surgery, the number of people in the household, distance of residence from the hospital in miles, educational level, employment status, gross annual yearly income, religious affiliation, and prior surgical experience. After the English version was constructed, Chinese and Spanish versions of the BQ were translated and back-translated by three native interpreters per language before use. Demographic questions on the BQ were loosely based on the U.S. Census 2000 for California. The university hospital is a major center for medical specialties which serves not only the local community, but patients within the state. As an example, 86% of the family members who participated lived >10 miles from the hospital.

Age. In California, the majority of the population (72.7%) is 18 years and older (U.S. Census Bureau, 2000). Family member age was recorded by birthdate (i.e., month/day/year) and calculated as a continuous variable from the date the questionnaire was completed.

Gender. In California, males make up 49.8% of the population whereas females make up 50.2% of the population (U.S. Census Bureau, 2000). Self identification of gender was reported in two predetermined categories (i.e., man or woman).

Marital Status. Marital status is divided by age group in California. Adults between 35 – 59 years of age are married (66.3%) widowed, divorced or separated (19.8%) or single (13.9%). Adults over > 60 years of age, are married (57.5%) widowed (25.3%) divorced or separated (12.6%) or remain single (4.6%) (U.S. Census Bureau,

2000). Self identification of marital status was reported in five predetermined categories (i.e., single, married, partnered/not married, divorced or separated, widowed).

Ethnic Background. Out of 33,871,648 residents in California in the year 2000, there were 59.5% White, 16.8% Other (i.e., including Hispanic), 10.9% Asians, 6.7% Black, 1% American Indian and 0.3% Pacific Islander. In comparison to the rest of the nation, California has 7.3% more Asians and 11.3% more Hispanics/Other. Self identification of ethnic background was reported in eight predetermined categories (i.e., Asian, Black, Filipino, Hispanic, Native American, Pacific Islander, White, Other). Because participants may not self-identify ethnicity in a predetermined category, a blank space was provided for a handwritten response.

Family Member Role. The relationship to the person having surgery was reported in 13 predetermined categories (i.e., spouse or partner, parent or guardian, sibling, child, grandparent, aunt or uncle, friend, step-mother or -father, step-sister or -brother, step-child, cousin, niece or nephew, other/including in-laws).

Live with Surgical Patient. Living with the person having surgery was reported as a dichotomous variable (i.e., yes or no).

Number in Household. According to the U.S. Census (2000) the number of persons per household was reported at 2.87. The number of people who lived in the household was reported in a blank space and used as a continuous variable.

Miles from Hospital. The number of miles from the family member's residence to the hospital was reported in four predetermined categories (i.e., < 10 miles, 10 - 100 miles, 100 - 200 miles, > 200 miles).

Education. Levels of education have been reported in six categories: Primary, Incomplete Secondary, Secondary, Some Post-Secondary, 4-year Higher Degree,

Advanced Degree. For ease of recognition categories were renamed in the following six groups: elementary, some high school, high school diploma, some college, college degree, post-graduate degree.

Employment. The unemployment rate in California was at 6.6%, while unemployment rate for San Francisco was 3.9% (U.S. Census Bureau, 2000). Self report of employment status was reported in five predetermined categories (i.e., employed, unemployed, homemaker, retired, student).

Annual Household Income. Data for annual household income was calculated by earnings from the year 2000 presented in increments of $25,000 (U.S. Census Bureau, 2000). These increments were then approximated into quartiles to achieve sample equality in groups. Self report of gross annual household income was reported in four predetermined categories (i.e., < $20,000, $20,000 - $40,000, $40,001 - $75,000, > $75,000).

Religious Affiliation. Self-identification of religious affiliation was reported in seven predetermined categories (i.e., no religion, Buddhist, Christian, Hindu, Islam/Muslim, Judaism/Jewish, Spiritualism/New Age, other)

Surgical Experience. Prior surgical experience and was reported in three predetermined categories (i.e., no experience with surgery, bad experience with surgery, good experience with surgery). The question read, "Have you had prior surgical experience?" however, a family member could have interpreted this question in relation to themselves or the patient undergoing surgery.

Research Procedure

The data collection procedure took place in the preoperative clinic lobbies. On average, the preoperative visit took two hours. Wait time for the anesthesia interview

ranged between 15 to 120 minutes. Family members were able to easily complete the questionnaires within 15 to 20 minutes while they waited in the clinic lobby. Since the visit with the provider (i.e., anesthesiologist or nurse practitioner) was an external confounding variable which could potentially decrease or increase anxiety, family members were asked to complete questionnaires prior to the provider interview.

Family members were recruited after registration and check-in for the presurgical evaluation (see *Figure 4*). When patients and family members arrived, they would first register with hospital admission personnel. Then, a clinic receptionist would give instructions about the date, time and arrival location for the scheduled procedure. The preoperative evaluation was conducted, on average, 2.6 days prior to surgery. After check-in the Patient Care Technician (PCT) escorted the patient into a separate room for vital signs (VS), electrocardiograms (EKG) and laboratory testing (Lab). It was during this time that family members sat alone in the clinic lobby for approximately 10 - 15 minutes and were asked to complete a questionnaire. Parents of young children (under 16) were allowed to accompany the child for VS, EKG and Lab, however they managed to complete questionnaires during the wait in the lobby prior to the interview with the anesthesiologist or nurse practitioner.

Clipboards, pens and questionnaires were available at the reception desk and distributed in person while family members waited. Patients were rarely present during the family member's participation. Each questionnaire was given a numerical label along with a generic code for type of surgery, patient age and gender. No names were used during this investigation. Questionnaires were organized by language and kept in several cardboard boxes in a safe location on the side of the desk at respective clinic sites. The investigator was responsible for replenishing questionnaires at each site.

Completing a questionnaire was optional. Family members who were willing to mark answers on the form while they waited in the lobby consented to project participation. Because a family member's name might link the participant to the patient, signatures were not required. Instead, an informational consent sheet about participation in the project was provided. When questionnaires were completed, responses were deposited into a secure collection box. Questionnaires that were not completed were either deposited in the box or turned back in to the receptionist.

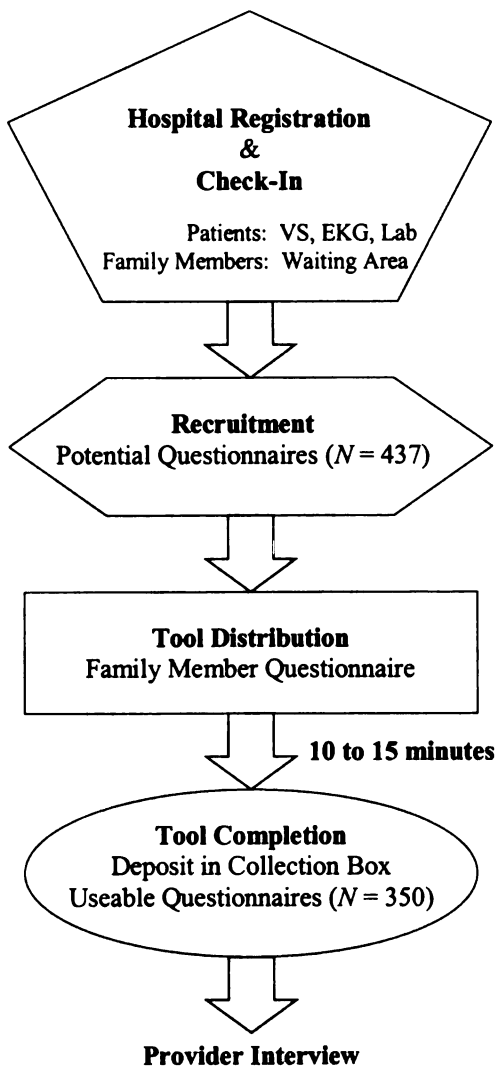


Figure 4. Data collection procedure.

Quantitative and Qualitative Data Analysis

Quantitative Data Analysis

The first aim of this study was to explore levels of family member anxiety in relation to satisfaction with family functioning, perceived social support from family and descriptive variables prior to surgery. Initial analysis used descriptive statistics to characterize family members and patients. Continuous and dichotomous variables included reports of means and standard deviations, while categorical variables were presented with frequencies and percents.

Comparisons were also made. Between group differences for family members of adults versus family members of children were contrasted using t-tests and the Chi-Square statistic. Between group differences were also presented for those who responded to the open-ended statement. To examine within group differences, scores on major instruments (i.e., S-STAI, APGAR, PSS-Fa) were reported for each descriptive variable and compared using a one-way analysis of variance.

The major hypothesis stated that family member anxiety was negatively related to satisfaction with family functioning, perceived social support from family and age. Females and those of non-White ethnic background (e.g., Asians and Hispanics) were expected to have more anxiety prior to surgery. Pearson correlation coefficients were used to estimate initial associations between variables. Then, a hierarchical multiple regression model was used to explain the variance in anxiety scores (i.e., dependent variable) and family function, perceived support, and contextual variables (i.e., independent variables). Finally, a second hierarchical multiple regression model was conducted utilizing other variables collected to create an alternative predictive model.

Qualitative Data Analysis

The second aim of this study was to explicate what was most stressful for family members prior to surgery. Content analysis was the descriptive method selected to evaluate hand-written responses. The open-ended statement asked family members to: "Please list as least three things that have been most stressful for you before this surgery. Circle the one which is most important." Latent content analysis has been considered low-inference, which involves a description from what has been written without complex interpretations. According to Sandelowski (2000), this type of qualitative description is "very useful for clinicians who wish to obtain unadorned or minimally theorized answers to specific questions" (p. 337). The short statements family members listed as most stressful seemed amenable to this type of descriptive content analysis.

Content analysis involved a strategy of tentatively coding of data under general subcategories based on word usage and subject matter. Quasi-statistical analyses have been performed in content analysis in order to describe patterns or regularities (Sandelowski, 2000). First, responses were transcribed into a word-processing program, in table format, with each statement labeled with a corresponding identification number. Any statement that was circled received an asterisk (*) to indicate the most stressful item. Then, a word find was used for repeated words. Finally, words were highlighted, counted for frequencies, and arranged in subcategories demonstrated in Table 6. Initially there were nine subcategories which included words associated with: (a) emotional adjectives synonymous with anxiety, (b) outcome/result, (c) pain/complications, (d) work/job, (e) finances/money, (f) driving/traveling/parking, (g) recovery, (h) waiting, and (i) death.

After the groups of subcategories were arranged by word usage (see Table 6), direct quotations were then evaluated for content. Each individual statement that

contained a common phrase or similar content matter was cut and pasted into each subcategory. Nine new categories emerged after content analysis. These new categories included: (a) concern for the patient's physical condition, (b) concern for the patient's emotional status, (c) caring for others including family issues at home, (d) dealing with doctors, (e) direct mention of the surgery or anesthetic, (f) scheduling/appointments and (g) individual concerns which had a personal focus.

Table 6

Subcategories Based on Word Usage

Common Words	Number Recorded	Total
Worry/Worried Uncertain/ty/Unknown Stress/ful Fear/Fright/Scared Anxiety/Anxious	xxxxx xxxxx xxxxx xxxxx xxxxx xx xxxxx xxxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxxx xxxx xxxxx xxxxx x xxxxx xxx	89
Outcome Result	xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxx xxxxx xxx	46
Pain Complication/s	xxxxx xxxxx xxxxx xxxxx xx xxxxx xxxxx xxxxx	37
Work Job	xxxxx xxxxx xxxxx xxxxx xxxxx xx xxxxx xx	34
Finances/Financial Money/$/Cost/Pay	xxxxx xxxxx xxxxx xx xxxxx xxxxx xxxx	31
Drive/Driving Travel/Trip Park/Parking	xxxxx xxxxx xxxx xxxxx xxxxx xx xxxx	30
Recovery/Recuperation	xxxxx xxxxx xxxxx xxxxx	20
Wait	xxxxx xxxxx xxxxx xxxx	19
Death/Dying/Loss/Losing	xxxxx xxxxx xx	12

As the analysis progressed, specific subcategories were expanded, condensed or discarded based upon lack of supporting statements or relative significance. For example, the initial category of emotional adjectives (i.e., worry, stress, fear) were evaluated for content and portioned out into other subcategories, however the larger heading of

uncertainty was retained. The subcategory of pain/complications was divided under two separate headings. Three other subcategories were discarded for containing less than five supporting statements (i.e., religion, confidence in surgical procedure or surgeon and a change in living situation/housing/buying car).

It is important to note that statements were only used once, and were not duplicated in more than one category. For example, a separate heading was utilized for both 'Uncertainty' and 'Outcome', but consider the statement, 'Uncertainty of outcome'. In situations like this one, statements were portioned out based on occurrence in subcategories in descending order. In other words, 'Outcome' (e.g., as the largest subcategory), received this statement.

Distinctions were not only based on word use (i.e., nouns, verbs, adjectives) but on content, theme and general ideas. All subcategories were then analyzed for frequencies (i.e., the number of statements in each section) with corresponding percents. Seventeen final categories were then presented based on the frequency in descending order. Categories were also listed in order of what was considered most stressful. Finally, the real experience of the family member was summarized into three major themes: the Stress of Surgical Event, the Stress of Resource Consumption and the Stress of Healthcare Matters

Qualitative Validity. Classic qualitative validity was described as attention to trustworthiness (Lincoln & Guba, 1985). Trustworthiness had four elements that roughly corresponded to internal and external validity, reliability and objectivity in quantitative studies. These four elements included credibility, dependability, confirmability and transferability.

Credibility, parallel to internal validity, attempts to demonstrate that the respondent has been accurately described. Originally, Lincoln and Guba (1985) described this process as prolonged engagement with participants, persistent observation or triangulation. Because all data were collected from written text and not from direct interaction, credibility was based solely on family member written self report.

Dependability, similar to external validity, was achieved through the complete reporting of methodological steps that were understandable and well defined. Described within dependability, the term auditability refers to the extent to which other researchers can follow the decision trail for the study based upon the information provided by the researcher (Beck, 1993; Lincoln & Guba, 1985; Rodwell & Byers, 1997). To meet this criterion, a word-processing trail of each alteration in subcategory (i.e., addition, expansion, collapse or omissions) was recorded in a series of step-wise files. Additionally, a definition of each category was thoroughly documented and retrievable.

Confirmability, similar to reliability, was achieved by linking the transcribed text back to the raw data. During this analysis, the original hand-written statements were transcribed and typed into a word-processing program. Transcribed text was then reviewed with the original handwritten data, including grammar and punctuation errors. All illegible handwriting and improper syntax were carefully reviewed again. Direct quotations from the raw data were compiled for inclusion in the results section. Transferability, like objectivity, permits findings to be useful for other family members in similar situations, with patients undergoing comparable surgeries. To achieve this end, careful description of the setting, type of surgery and family member characteristics were reported in detail.

CHAPTER IV: RESULTS

In order to describe the experiences of family members prior to surgery, both quantitative and qualitative data are presented. First, sample characteristics were reported, followed by scores on major instruments. Next, the major hypothesis of the study was tested using quantitative variables of interest within a multiple regression analysis. An optimal model was then discussed using alternative variables under study. Qualitative content analysis was conducted on the family members who provided handwritten statements about what was most stressful prior to surgery. Results of content analysis were reviewed, quantified and summarized into three major themes.

Initial Findings

Sample Characteristics

Participants in the study were family members of a patient undergoing surgery. A total of 350 completed questionnaires were used for this analysis. Although 437 questionnaires were collected, 37 were omitted for missing data or were returned unmarked and 50 were completed accidentally by patients (i.e., as determined by age and responses to open-ended statement). Since the 37 questionnaires omitted were missing essential demographic information, family members who did not complete the questionnaire could not be compared to those who did.

Out of 350 family members who participated, the majority were white (n = 205) middle-aged females (n = 240), who were married (n = 252), lived with the surgical patient (n = 263) and were employed (n = 226). In addition, most family members reported that prior experience with surgery was good (n = 213). Table 7 illustrates individual demographic characteristics of the family members.

Table 7

Family Member Characteristics: Descriptive Information

Characteristics	Frequency *(%)*	Range	Mean *(SD)*
Age & Gender		*yrs→yrs*	
Total Sample	350 *(100.0)*	18→92	47.5 *(± 15.1)*
Male	110 *(31.4)*	18→92	48.5 *(± 16.2)*
Female	240 *(68.6)*	18→86	46.8 *(± 14.6)*
Marital Status			
Married	252 *(72.0)*		
Single	46 *(13.1)*		
Divorced/Separated	30 *(8.6)*		
Partnered/Not Married	16 *(4.6)*		
Widowed	6 *(1.7)*		
Ethnic Background			
White	205 *(58.6)*		
Hispanic	57 *(16.3)*		
Asian	48 *(13.7)*		
Black	13 *(3.7)*		
Other	27 *(7.7)*		
Family Member Role			
Spouse/Partner	132 *(37.7)*		
Parent/Guardian	116 *(33.1)*		
Child	53 *(15.1)*		
Sibling	18 *(5.2)*		
Other	31 *(8.9)*		
Live with Surgical Patient			
Yes	263 *(75.1)*		
No	87 *(24.9)*		
Number in Household			
1	10 *(2.9)*		
2	122 *(34.9)*		
3	75 *(21.5)*		
4	73 *(20.9)*		
5	39 *(11.1)*		
6	17 *(4.9)*		
7	12 *(3.4)*		
9	1 *(0.2)*		
12	1 *(0.2)*		

Table 7 (*continued*)

Characteristics	Frequency *(%)*
Miles from Hospital	
< 10	48 *(13.8)*
10 – 100	172 *(49.1)*
100 – 200	74 *(21.1)*
> 200	56 *(16.0)*
Education	
Elementary	8 *(2.3)*
Some High School	20 *(5.7)*
High School	68 *(19.4)*
Some College	107 *(30.6)*
College Degree	88 *(25.1)*
Post-Graduate	59 *(16.9)*
Employment	
Employed	226 *(64.6)*
Retired	51 *(14.6)*
Homemaker	42 *(12.0)*
Unemployed	31 *(8.8)*
Annual Household Income	
< $20,000	68 *(19.4)*
$20,000 – $40,000	80 *(22.9)*
$40,001 – $75,000	98 *(28.0)*
> $75,000	104 *(29.7)*
Religious Affiliation	
Christian	192 *(54.9)*
No religion	81 *(23.1)*
Buddhist	13 *(3.8)*
Jewish	11 *(3.1)*
Other	53 *(15.1)*
Surgical Experience	
Good experience	213 *(60.9)*
No experience	82 *(23.4)*
Bad experience	55 *(15.7)*

In groups with smaller frequencies, data reduction was used in four categories: ethnic background, family member role, employment and religious affiliation. Original frequencies are reported adjacent to new condensed categories depicted in Table 8.

Table 8

Family Member Characteristics: Original and Collapsed Categories

Characteristics	Frequency *(%)*
Ethnic Background	
White	205 *(58.6)*
Hispanic	57 *(16.3)*
Asian	48 *(13.7)*
Black	13 *(3.7)*
Other	11 *(3.2)*
Filipino	8 *(2.2)*
Native American	6 *(1.7)*
Pacific Islander	2 *(0.6)*
Family Member Role	
Spouse/Partner	132 *(37.7)*
Parent/Guardian	116 *(33.1)*
Child	53 *(15.1)*
Sibling	18 *(5.2)*
Other	9 *(2.5)*
Friend	9 *(2.5)*
Grandparent	3 *(1.1)*
Aunt or Uncle	2 *(0.6)*
Niece or Nephew	2 *(0.6)*
Step-Mother or Father	2 *(0.6)*
Step-Child	2 *(0.6)*
Step-Sister or Brother	1 *(0.2)*
Cousin	1 *(0.2)*
Employment	
Employed	226 *(64.6)*
Retired	51 *(14.6)*
Homemaker	42 *(12.0)*
Unemployed	23 *(6.6)*
Student	8 *(2.2)*
Religious Affiliation	
Christian	192 *(54.9)*
No religion	81 *(23.1)*
Buddhist	13 *(3.7)*
Judaism/Jewish	11 *(3.1)*
Other	37 *(10.6)*
Spiritualism/New Age	8 *(2.2)*
Islam/Muslim	5 *(1.4)*
Hindu	3 *(1.0)*

Characteristics	Frequency *(%)*
Ethnic Background	
White	205 *(58.6)*
Hispanic	57 *(16.3)*
Asian	48 *(13.7)*
Black	13 *(3.7)*
Other	27 *(7.7)*
Family Member Role	
Spouse/Partner	132 *(37.7)*
Parent/Guardian	116 *(33.1)*
Child	53 *(15.1)*
Sibling	18 *(5.2)*
Other	31 *(8.9)*
Employment	
Employed	226 *(64.6)*
Retired	51 *(14.6)*
Homemaker	42 *(12.0)*
Unemployed	31 *(8.8)*
Religious Affiliation	
Christian	192 *(54.9)*
No religion	81 *(23.1)*
Buddhist	13 *(3.7)*
Judaism/Jewish	11 *(3.1)*
Other	53 *(15.2)*

Characteristics of the patient undergoing surgery are also described. No missing information about type of surgical case was found. Out of 350 surgical patients, approximately one-half were male (n = 183) and the other half female (n = 167). Questionnaires were distributed an average of 2.6 days prior to a patient's surgery. Approximately a third of the procedures were categorized as low-severity (35%), medium-severity (34%) or high-severity (31%) as determined by the length of surgery and the expected length of hospital stay. All surgeries were considered elective and none of the surgeries were to be performed on an emergency basis. Table 9 illustrates characteristics associated with the surgical patient.

Table 9

Surgical Patient Characteristics: Descriptive Information

Characteristics	Frequency *(%)*	Range	Mean *(SD)*
Age & Gender		*mos→yrs*	
Total Sample	350 *(100.0)*	3→88	43.4 *(± 26.2)*
Male	183 *(52.3)*	6→87	40.5 *(± 26.0)*
Female	167 *(47.7)*	3→88	46.7 *(± 26.2)*
Days Before Surgery		*day→day*	
	350 *(100.0)*	0→14	2.6 *(± 2.4)*
Surgical Severity			
Low	122 *(34.9)*		
Medium	119 *(34.0)*		
High	109 *(31.1)*		
Type of Surgery			
Cardio-Thoracic-Vascular	23 *(6.6)*		
Gastrointestinal	35 *(10.0)*		
General-Plastic Surgery	43 *(12.3)*		
Head-Neck	75 *(21.4)*		
Neurosurgical	51 *(14.6)*		
Orthopedic	61 *(17.4)*		
Urologic-Genital	62 *(17.7)*		

Table 9 (*continued*)

Cardio-Thoracic-Vascular	*f*
Abdominal Aortic Aneurysm Repair	1
Aortic Valve Replacement	1
Arterial Venous Fistula	2
Atrial Septal Defect Closure	1
Catheter Insertion/Removal	2
Cardiac Radiofrequency Ablation	2
Carotid Endarterectomy	3
Coronary Artery Bypass Graft	2
Thoracotomy with Lung Resection	9

Gastrointestinal	*f*
Cholecystectomy	5
Colectomy	1
Esophageal Dilatation	1
Esophagectomy	3
Gastric Bypass	4
Hemorrhoidectomy	1
Hepatectomy, Liver Resection	7
Low Anterior Resection	3
Nissen Fundoplication	5
Pancreaticoduodenectomy	5

General-Plastic Surgery	*f*
Breast Lumpectomy	2
Evaluation Under Anesthesia	5
Facial Reconstruction	2
Hemangioma & Scar Removal	3
Hernia Repair, Inguinal	2
Hernia Repair, Ventral	2
Hysterectomy	5
Hysteroscopy	1
Mass Excision & Biopsy	9
Mastectomy	2
Melanoma, Wide Local Excision	6
Panniculectomy	2
Split Thickness Skin Grafting	2

Head-Neck	*f*
Cataract Extraction	6
Cleft Lip Repair	3
Cleft Palate Repair	5
Cochlear Device Implant	1
Corneal Transplant	1
Dental Restoration	20
Le Fort Osteotomy	4
Mastoidectomy	3
Micro Direct Laryngoscopy	3
Modified Radical Neck Dissection	2
Myringotomies	3
Ondontogenic Cyst	2

Head-Neck (continued)	*f*
Parathyroidectomy	4
Sinus Endoscopy	2
Strabismus Repair	3
Thyroidectomy	7
Tonsillectomy & Adenoidectomy	5
Vitrectomy	1

Neurosurgical	*f*
Burr Hole, Craniectomy	3
Craniotomy, Aneurysm-AVM	7
Craniotomy, Tumor	23
Deep Brain Stimulator Implantation	3
Neuroangio-Intravascular Surgery	8
Pituitary Adenoma Removal	6
Ventriculoperitoneal Shunt Revision	1

Orthopedic	*f*
Femoral Osteotomy	2
Foot Surgery	2
Hand Surgery	5
Hardware Removal, Pins-Screws	5
Hip Arthroplasty	2
Knee Arthroplasty	8
Knee Arthroscopy	2
Laminectomy	10
Open Reduction of Fracture	2
Shoulder Arthroscopy	3
Spinal Fusion Cervical	4
Spinal Fusion Thoraco-Lumbar	16

Urologic-Genital	*f*
Adrenalectomy	4
Bladder Suspension	1
Circumcision	4
Cystoscopy	6
Hydrocelectomy	1
Hypospadius Repair	4
Inflatable Sphincter Placement	1
Nephrectomy	8
Orchiopexy	3
Penileplasty	5
Percutaneous Lithotripsy	1
Prostatectomy	5
Pyeloplasty	3
Radioactive Seed Implant	1
Renal Transplant	6
Transurethral Resection Prostate	3
Ureteroplasty	3
Ureteroscopy	2
Vaginectomy	1

The total sample ($N = 350$) was then divided into two groups based on the age of the surgical patient. An adult surgical patient was labeled as over the age of 18. Comparisons were made between family members with an adult patient versus a child undergoing surgery. All patient age groups were included since the hypothesis was concerned with populations of younger females, (accessed conveniently by including mothers of young children).

Results showed the largest portion of the total sample (74%) consisted of family members of adult patients ($n = 259$) while the smaller portion (26%) consisted of family members of children undergoing surgery ($n = 91$). Significant differences were found between age ($t = 10.12, p < .001$), ethnic background ($\chi^2 = 36.73, p < .001$), living with the patient ($\chi^2 = 21.96, p < .001$), the number of people in the household ($t = -7.00$, $p < .001$), education ($\chi^2 = 13.96, p = .016$), employment ($\chi^2 = 23.23, p < .001$), income ($\chi^2 = 12.92, p = .005$), prior surgical experience ($\chi^2 = 22.33, p < .001$) and surgical severity ($\chi^2 = 79.09, p < .001$). A Chi-Square was not attempted on family member role since 96% of the family members of a child undergoing surgery were parents. An assumption of the Chi-Square test statistic is that expected frequencies are greater than or equal to five (i.e. ≥ 5) in at least 80% of the categories (Green & Salkind, 2005).

As expected, family members of children were largely parents (i.e. 62 mothers and 25 fathers). These family members were younger ($M = 35$ years) as compared to family members of the adult patient ($M = 52$ years). Parents of children were largely Hispanic (56%) as compared to White (18%) and had more people living within the household ($M = 4$). Finally, frequencies and percentages showed that parents of children had less education, less income, less surgical experience and more surgeries classified as low severity. Table 10 details the differences between groups.

Table 10

Family Member Characteristics: Adult Patient versus Child Patient Undergoing Surgery

Characteristics	*n* = 259 Adult Patient	*n* = 91 Child Patient	Test/*p*-value
Age	Mean *(SD)*	Mean *(SD)*	$t = 10.12, p < .001$
	51.8 *(± 14.0)*	35.4 *(± 11.0)*	
Gender	Frequency *(%)*	Frequency *(%)*	$\chi^2 = 0.89, p = .345$
Male	85 *(32.8)*	25 *(27.5)*	
Female	174 *(67.2)*	66 *(72.5)*	
Marital Status			$\chi^2 = 5.04, p = .283$
Married	192 *(74.1)*	60 *(65.9)*	
Single	28 *(10.8)*	18 *(19.8)*	
Divorced/Separated	22 *(8.5)*	8 *(8.8)*	
Partnered/Not Married	12 *(4.6)*	4 *(4.4)*	
Widowed	5 *(2.0)*	1 *(1.1)*	
Ethnic Background			$\chi^2 = 36.73, p < .001$
White	168 *(64.9)*	37 *(40.7)*	
Hispanic	25 *(9.6)*	32 *(35.2)*	
Asian	39 *(15.1)*	9 *(9.8)*	
Black	10 *(3.9)*	3 *(3.3)*	
Other	17 *(6.5)*	10 *(11.0)*	
Family Member Role			*Not Applicable*
Spouse/Partner	132 *(51.0)*	0 *(0)*	*(small cell size)*
Parent/Guardian	29 *(11.2)*	87 *(95.6)*	
Child	53 *(20.5)*	0 *(0)*	
Sibling	17 *(6.5)*	1 *(1.1)*	
Other	28 *(10.8)*	3 *(3.3)*	
Live with Surgical Patient			$\chi^2 = 21.96, p < .001$
Yes	178 *(68.7)*	85 *(93.4)*	
No	81 *(31.1)*	6 *(6.6)*	
Miles from Hospital			$\chi^2 = 2.89, p = .409$
< 10	35 *(13.5)*	13 *(14.3)*	
10 – 100	129 *(49.8)*	43 *(47.2)*	
100 – 200	50 *(19.3)*	24 *(26.4)*	
> 200	45 *(17.4)*	11 *(12.1)*	
Number in Household	Mean *(SD)*	Mean *(SD)*	$t = -7.00, p < .001$
	3.0 *(± 1.4)*	4.3 *(± 1.5)*	

Table 10 (*continued*)

Characteristics	$n = 259$ Adult Patient	$n = 91$ Child Patient	Test/*p*-value
Education	Frequency *(%)*	Frequency *(%)*	$\chi^2 = 13.96, p = .016$
Elementary	4 *(1.5)*	4 *(4.4)*	
Some High School	11 *(4.2)*	9 *(9.9)*	
High School	46 *(17.8)*	22 *(24.2)*	
Some College	77 *(29.7)*	30 *(33.0)*	
College Degree	70 *(27.0)*	18 *(19.8)*	
Post-Graduate	51 *(19.8)*	8 *(8.7)*	
Employment			$\chi^2 = 23.23, p < .001$
Employed	168 *(64.9)*	58 *(63.7)*	
Retired	49 *(18.9)*	2 *(2.2)*	
Homemaker	24 *(9.3)*	18 *(19.8)*	
Unemployed	18 *(6.9)*	13 *(14.3)*	
Annual Household Income			$\chi^2 = 12.92, p = .005$
< $20,000	43 *(16.6)*	25 *(27.4)*	
$20,000 - $40,000	52 *(20.1)*	28 *(30.8)*	
$40,001 - $75,000	79 *(30.5)*	19 *(20.9)*	
> $75,000	85 *(32.8)*	19 *(20.9)*	
Religious Affiliation			$\chi^2 = 3.88, p = .423$
Christian	144 *(55.6)*	48 *(52.7)*	
No religion	63 *(24.3)*	18 *(19.8)*	
Buddhist	9 *(3.5)*	4 *(4.4)*	
Jewish	9 *(3.5)*	2 *(2.2)*	
Other	34 *(13.1)*	19 *(20.9)*	
Surgical Experience			$\chi^2 = 22.33, p < .001$
Good experience	166 *(64.1)*	47 *(51.6)*	
No experience	45 *(17.4)*	37 *(40.7)*	
Bad experience	48 *(18.5)*	7 *(7.7)*	
Surgical Severity			$\chi^2 = 79.09, p < .001$
High	102 *(39.4)*	7 *(7.7)*	
Medium	101 *(39.0)*	18 *(19.8)*	
Low	56 *(21.6)*	66 *(72.5)*	
Major Instruments	Mean *(SD)*	Mean *(SD)*	
Anxiety	38.9 *(± 11.5)*	39.5 *(± 12.4)*	$t = -0.40, p = .686$
Family Function	14.7 *(± 4.0)*	15.2 *(± 3.8)*	$t = -0.99, p = .321$
Perceived Support	16.2 *(± 4.5)*	16.3 *(± 3.9)*	$t = -0.33, p = .744$

Most importantly, regardless of whether an adult or child was undergoing surgery, no dissimilarity was found between scores of family members on all three major instruments. In other words, there was no statistically significant difference between mean scores for anxiety, family function and perceived support between groups of family members.

Scores on three instruments have also been presented in categories of descriptive family member characteristics (see Table 11).

Table 11

Family Member Characteristics: Scores on Major Instruments

Characteristics	*S-STAI* **Anxiety**	*APGAR* **Function**	*PSS-Fa* **Support**
	Mean *(SD)*	Mean *(SD)*	Mean *(SD)*
Total Sample	39.1 *(± 11.7)*	14.8 *(± 4.0)*	16.2 *(± 4.3)*
Age	$F = .72, p = .539$	$F = .79, p = .500$	$F = .40, p = .751$
18 – 37	38.6 *(± 11.7)*	15.1 *(± 3.7)*	16.1 *(± 4.2)*
38 – 47	40.0 *(± 12.8)*	14.6 *(± 3.9)*	15.9 *(± 4.4)*
48 – 57	37.9 *(± 10.2)*	15.2 *(± 4.1)*	16.6 *(± 3.9)*
58 – 92	40.1 *(± 12.2)*	14.4 *(± 4.3)*	16.2 *(± 4.7)*
Gender	$F = .11, p = .741$	$F = 1.57, p = .211$	$F = 5.34, p = .021$
Male	38.8 *(± 12.0)*	14.5 *(± 4.0)*	15.4 *(± 4.5)*
Female	39.2 *(± 11.6)*	15.0 *(± 4.0)*	17.0 *(± 4.2)*
Marital Status	$F = .71, p = .583$	$F = .92, p = .450$	$F = .42, p = .796$
Married	39.1 *(± 11.8)*	15.0 *(± 3.9)*	16.3 *(± 4.3)*
Single	37.4 *(± 11.3)*	14.6 *(± 4.5)*	16.1 *(± 4.5)*
Divorced/Separated	41.6 *(± 12.1)*	13.9 *(± 4.7)*	15.5 *(± 4.5)*
Partnered/Not Married	37.7 *(± 9.6)*	14.8 *(± 2.9)*	16.0 *(± 4.6)*
Widowed	41.5 *(± 13.2)*	13.0 *(± 4.0)*	15.0 *(± 4.1)*
Ethnic Background	$F = 1.66, p = .159$	$F = 1.80, p = .128$	$F = 2.71, p = .030$
White	39.4 *(± 12.0)*	15.1 *(± 4.0)*	16.7 *(± 4.2)*
Hispanic	38.0 *(± 10.6)*	14.7 *(± 3.9)*	15.5 *(± 4.3)*
Asian	36.3 *(± 11.0)*	15.0 *(± 3.7)*	16.4 *(± 4.0)*
Black	41.5 *(± 12.0)*	14.3 *(± 4.3)*	14.5 *(± 4.8)*
Other	42.8 *(± 12.6)*	13.0 *(± 4.0)*	14.4 *(± 4.7)*

Table 11 (*continued*)

Characteristics	*S-STAI* Anxiety	*APGAR* Function	*PSS-Fa* Support
Family Member Role	$F = 3.10, p = .016$	$F = 1.83, p = .123$	$F = .20, p = .936$
Spouse/Partner	39.9 (± 10.5)	14.8 (± 3.5)	16.1 (± 4.5)
Parent/Guardian	40.2 (± 13.0)	14.7 (± 4.3)	16.2 (± 4.1)
Child	35.7 (± 11.2)	15.8 (± 4.0)	16.6 (± 4.0)
Sibling	32.8 (± 10.0)	15.4 (± 3.6)	15.7 (± 3.8)
Other	40.9 (± 11.8)	13.5 (± 4.8)	16.0 (± 5.2)
Live with Surgical Patient	$F = .08, p = .779$	$F = .00, p = .953$	$F = 4.24, p = .228$
Yes	39.2 (± 11.6)	14.8 (± 3.9)	16.3 (± 4.2)
No	38.8 (± 12.0)	14.9 (± 4.4)	16.0 (± 4.7)
Number in Household	$F = .27, p = .976$	$F = .43, p = .903$	$F = .27, p = .975$
1	40.1 (± 13.2)	13.9 (± 3.4)	15.8 (± 3.6)
2	39.4 (± 11.9)	15.1 (± 3.9)	16.4 (± 4.5)
3	38.7 (± 10.9)	14.3 (± 4.8)	15.8 (± 4.8)
4	40.2 (± 12.8)	15.0 (± 3.6)	16.4 (± 3.8)
5	38.0 (± 12.0)	14.8 (± 3.3)	16.0 (± 4.2)
6	37.0 (± 10.2)	14.9 (± 4.2)	15.9 (± 3.9)
7	37.3 (± 9.7)	15.8 (± 3.9)	16.7 (± 4.2)
9	39.0 --	14.0 --	14.0 --
12	43.0 --	17.0 --	13.0 --
Miles from Hospital	$F = 1.28, p = .283$	$F = .66, p = .577$	$F = .27, p = .845$
< 10	41.6 (± 13.6)	14.4 (± 3.9)	16.6 (± 4.5)
10 – 100	38.8 (± 11.8)	15.0 (± 4.0)	16.1 (± 4.3)
100 – 200	39.6 (± 10.1)	14.5 (± 4.0)	16.3 (± 4.1)
> 200	37.2 (± 11.7)	15.1 (± 4.1)	15.9 (± 4.6)
Education	$F = .50, p = .777$	$F = .75, p = .587$	$F = 1.28, p = .272$
Elementary	43.9 (± 11.4)	13.6 (± 5.3)	14.3 (± 3.9)
Some High School	38.9 (± 9.3)	14.0 (± 4.5)	14.6 (± 4.4)
High School	38.7 (± 11.1)	14.8 (± 4.4)	16.0 (± 4.4)
Some College	38.9 (± 11.9)	15.1 (± 3.8)	16.7 (± 4.2)
College Degree	40.0 (± 12.2)	14.5 (± 3.9)	16.4 (± 4.4)
Post-Graduate	38.0 (± 12.4)	15.3 (± 3.6)	16.1 (± 4.2)
Employment	$F = .55, p = .649$	$F = 1.67, p = .174$	$F = 1.06, p = .365$
Employed	39.0 (± 11.9)	15.0 (± 3.8)	16.4 (± 4.1)
Retired	40.6 (± 11.5)	13.9 (± 4.7)	16.5 (± 4.3)
Homemaker	37.5 (± 11.9)	15.6 (± 4.2)	15.7 (± 5.2)
Unemployed	39.1 (± 10.5)	14.4 (± 3.9)	15.1 (± 4.5)

Table 11 (*continued*)

Characteristics	*S-STAI* Anxiety	*APGAR* Function	*PSS-Fa* Support
Annual Household Income	$F = 1.62, p = .184$	$F = 2.47, p = .062$	$F = 4.60, p = .004$
< $20,000	40.7 (± 12.8)	14.2 (± 4.3)	14.9 (± 4.8)
$20,000 – $40,000	40.7 (± 11.2)	14.2 (± 4.4)	15.6 (± 4.3)
$40,001 – $75,000	37.8 (± 11.0)	15.5 (± 3.7)	17.1 (± 3.9)
> $75,000	38.0 (± 11.9)	15.1 (± 3.6)	16.7 (± 4.2)
Religious Affiliation	$F = 4.33, p = .002$	$F = 1.18, p = .320$	$F = 1.74, p = .141$
Christian	38.5 (± 11.4)	14.9 (± 4.1)	16.5 (± 4.4)
No religion	38.4 (± 12.5)	15.4 (± 3.8)	16.2 (± 4.1)
Buddhist	32.8 (± 9.9)	13.5 (± 3.8)	15.5 (± 3.3)
Jewish	50.4 (± 12.6)	15.5 (± 4.3)	17.3 (± 3.8)
Other	41.4 (± 10.6)	14.2 (± 3.9)	14.9 (± 4.4)
Surgical Experience	$F = 1.91, p = .150$	$F = .86, p = .424$	$F = 2.57, p = .078$
Good experience	38.5 (± 11.5)	15.0 (± 4.2)	16.6 (± 4.2)
No experience	38.7 (± 11.2)	14.8 (± 3.5)	15.8 (± 4.1)
Bad experience	41.9 (± 13.2)	14.2 (± 4.0)	15.3 (± 4.9)
Surgical Severity	$F = 1.71, p = .182$	$F = .74, p = .307$	$F = .20, p = .821$
Low	38.7 (± 11.4)	15.1 (± 4.1)	16.2 (± 4.4)
Medium	38.0 (± 11.5)	14.7 (± 4.1)	16.0 (± 4.5)
High	40.8 (± 12.3)	14.8 (± 3.8)	16.4 (± 4.0)
Type of Surgery	$F = .50, p = .809$	$F = .38, p = .892$	$F = .86, p = .537$
Cardio-Thoracic-Vascular	40.8 (± 15.1)	15.1 (± 3.5)	16.5 (± 4.3)
Gastrointestinal	38.3 (± 11.5)	14.3 (± 4.6)	15.5 (± 5.1)
General-Plastic Surgery	37.5 (± 11.5)	15.0 (± 4.2)	15.2 (± 4.6)
Head-Neck	39.2 (± 11.4)	14.6 (± 4.3)	16.1 (± 4.0)
Neurosurgical	37.9 (± 11.7)	15.1 (± 3.6)	16.1 (± 4.2)
Orthopedic	40.7 (± 12.6)	14.7 (± 4.3)	16.5 (± 4.7)
Urologic-Genital	39.2 (± 10.5)	15.3 (± 3.5)	16.9 (± 3.7)

An analysis of variance showed significant group differences for family members' scores on anxiety (S-STAI) and perceived support (PSS-Fa). No significant group differences were found for scores on satisfaction with family functioning (Family APGAR). Significant group differences were found between anxiety scores in the categories of family member role ($F_{4, 345} = 3.10, p = .016$) and religious affiliation ($F_{4, 345} = 4.33, p = .002$). Siblings were identified as having lower scores on anxiety than other groups. For religious affiliation, family members who identified themselves as Buddhists had significantly lower scores on anxiety while Jewish family members has higher anxiety scores than all other groups.

Significant group differences were found between perceived support from the family scores in the categories of family member gender ($F_{1, 348} = 5.34, p = .021$) ethnic background ($F_{4, 345} = 2.71, p = .030$) and annual household income ($F_{3, 346} = 4.60$, $p = .004$). Female family members had significantly higher scores than male family members on the perceived support from family instrument. Differences between groups showed that those who identified themselves as White or Asian had significantly higher perceived support scores than those in Black or Other ethnic groups. Group differences also showed that family members who reported a gross household income of greater than $40,001 dollars per year had more perceived support than those family members who reported a gross household income of less than or equal to $40,000 dollars per year.
For all the instruments, no significant group differences were found based on age, marital status, living with the surgical patient, the number of people in the household, distance in miles from hospital, educational level, employment, prior surgical experience, surgical severity or type of surgery.

Analysis of Hypothesis

The first aim of the study was to explore levels of family member anxiety in relation to satisfaction with family functioning, perceived social support from family and descriptive variables prior to surgery. The major hypothesis was that family member anxiety was negatively related to satisfaction with family functioning, perceived social support from family and age. Females and those of non-White ethnic background (e.g., Asians and Hispanics) were also expected to have more anxiety prior to surgery.

Questionnaires completed by 350 family members were used for this analysis. Preliminary results showed that family function (r = -.369) and perceived support (r = -.298) were significantly and inversely related to anxiety. However, both family function and perceived support from family were highly correlated with each other at r = .683, indicating instruments might be measuring similar concepts. Age, gender and ethnic background were found not to be significantly correlated with anxiety (.040, .018, .136) respectively.

A simultaneous multiple linear regression analysis was then conducted to evaluate the relationship between independent variables (i.e., family function, perceived support, family member age, gender and ethnic background) and the dependent variable (i.e., anxiety). The squared multiple correlation coefficient was .155, indicating that approximately 16% of the total variance of the anxiety score can be accounted for by the optimum linear combination of family function, perceived support, age, gender and ethnic background $F_{7, 342} = 8.971, p < .001$.

The model summary, presented in Table 12 shows the relative strength of individual predicators. Not all of the variables contributed to the model as expected, only one of the five variables reached statistical significance ($p < .001$). Satisfaction with family functioning provided a significant unique contribution to the model and explained

approximately 5% of the variance in anxiety above and beyond perceived support, age, gender, and ethnic background. Had satisfaction with family functioning been the only predictor in the model, it would have explained 13% of the total variance in anxiety.

Table 12

Predictors of Family Member Anxiety: Regression Model

Dependent Variable = Anxiety *Total Sample N = 350*

Source	R^2	B	*Lower Bound* 95% CI	*Upper Bound* 95% CI	sr^2	df	F	p
Overall	**.155**					**7, 342**	**8.971**	**<.001**
Intercept		51.441	43.559	59.283				
Family Function		-.880	-1.276	-.484	.047	1, 342	19.095	**<.001**
Perceived Support		-.226	-.636	.104	.005	1, 342	1.995	.159
Age		.019	-.060	.099	.001	1, 342	.229	.633
Gender		.943	-1.567	3.453	.001	1, 342	.546	.461
Ethnic Background					.011	3, 342	1.550	.201
Black/Other vs. Asian		4.048	-.607	8.703	.007			.088
Hispanic vs. Asian		1.251	-3.002	5.505	.001			.563
White vs. Asian		3.128	-.334	6.589	.008			.076

Alternative Predictive Model

A further analysis was conducted to evaluate if any other variables produced a better predictive model of family member anxiety. As determined previously, family member anxiety was negatively related to satisfaction with family functioning, however other variables including perceived support from family, age, gender and ethnic

background added little to the model. As satisfaction with family functioning was the most significant predictor in the initial model, it was retained for the second analysis.

The same 350 family members who completed a questionnaire were included. All potential variables listed in Table 13 were entered into a new predictive model and only variables that were statistically significant were retained. Assumptions for the regression analysis including normal distribution and independence of variables were met (Green & Salkind, 2005). Then, a stepwise multiple linear regression analysis was conducted to evaluate the relative strength of all continuous and dichotomous variables to the dependent variable anxiety. Finally, each individual categorical variable (i.e., containing three or more levels) was entered into the model to determine each variable's unique contribution to the overall R square.

Table 13

Potential Predictive Variables of Anxiety

Other Variables Collected	
Marital Status	Employment
Family Member Role	Annual Household Income
Live with Surgical Patient	Religious Affiliation
Miles from Hospital	Surgical Experience
Education	Surgical Severity

Results of the multiple regression analysis uncovered a squared multiple correlation coefficient of .219, indicating that approximately 22% of the total variance of the anxiety score can be accounted for by the new optimum linear combination of family function, religious affiliation, family member role, and surgical severity $F_{8, 341} = 11.932$, $p < .001$. The model summary presented in Table 14 shows the relative strength of individual predictors.

Table 14

Predictors of Family Member Anxiety: Alternative Regression Model

Dependent Variable = Anxiety *Total Sample N = 350*

Source	R^2	B	*Lower Bound* 95% CI	*Upper Bound* 95% CI	sr^2	df	F	p
Overall	**.219**					**8, 341**	**11.932**	**<.001**
Intercept		43.498	34.805	52.190				
Family Function		-1.076	-1.355	-.796	.131	1, 341	57.328	**<.001**
Religious Affiliation					.050	3, 341	7.268	**<.001**
Christian vs. Buddhist		6.989	1.035	12.943	.012			**.022**
Jewish vs. Buddhist		19.231	10.735	27.727	.045			**<.001**
None/Other vs. Buddhist		8.477	2.452	14.503	.017			**.006**
Family Member Role					.022	3, 341	3.171	**.024**
Spouse/Partner vs. Sibling		6.144	.930	11.359	.012			**.021**
Parent/Other vs. Sibling		6.982	1.790	12.174	.016			**.009**
Child vs. Sibling		3.621	-2.025	9.267	.003			.208
Surgical Severity		2.796	.333	5.259	.011	1, 341	4.986	**.026**
High vs. Medium/Low								

Family function remained the greatest contributor in the new alternative model. An inverse relationship revealed that lower satisfaction with family functioning is related to higher anxiety scores. Controlling for all other variables, family function alone accounted for about 13% in the variance in anxiety score.

Religious affiliation had a unique contribution of 5% to the variance in anxiety score. Different religious groups had different anxiety scores. Mean anxiety scores were adjusted for all other variables in the model: Buddhists (M = 31.41), Christians (M = 38.40), None/Other Religions (M = 39.90) and Jewish (M = 50.64). Three of the comparisons are presented in the model summary, in accordance to rules of regression dummy coding. However, all possible pairwise comparisons of religious groups revealed that significant differences existed only between those who were Jewish and all other religious categories and those who were Buddhist with None/Other Religion. In other words, those who were Jewish had statistically higher anxiety scores then those in all other religious categories. Those who were Buddhist had significantly lower anxiety scores then those who had no religious or other religious affiliations.

The role of the family member had a unique contribution of 2% to the variance in anxiety score. Adjusted for all other variables, family members in different roles had different anxiety scores: Siblings (M = 33.29), Children (M = 36.91), Spouse/Partners (M = 39.44) and Parents or Others (M = 40.73). Three pairwise comparisons are presented in the model summary. Of all possible pairwise comparisons, the largest overall difference was found between the lower anxiety scores of siblings compared to the higher anxiety scores of parents and other family members.

Finally, surgical severity contributed 1% to the variance in anxiety score. Controlling for all other variables in the model the adjusted mean anxiety scores were: Low/Medium Severity (M = 38.22) and High Severity (M = 41.01). A positive relationship revealed that higher severity surgeries are related to higher family member anxiety scores.

Description of Self-Reported Stressors

A second aim of the study was to explicate what was most stressful for family members prior to surgery. Family members were asked to give a handwritten response to the statement, "Please list as least three things that have been most stressful for you before this surgery. Circle the one which is most important." Sample characteristics of the family members who responded to this question are described. Then, the frequencies and most significant stressors are identified in categories. Next, the dimensions of each category are substantiated with direct quotations from questionnaires. Finally, a summary of major themes surrounding the Stress of Surgery, the Stress of Resource Consumption and the Stress of Healthcare Matters are discussed.

Sample Characteristics

Out of 350 questionnaires, only 265 family members provided a handwritten response. All statements recorded by the 265 family members were used for this analysis. Some respondents provided a full list of all three statements 72% (n = 190), others two statements 15% (n = 40), while still others one statement 12% (n = 33). Finally, some provided a full page 1% (n = 2). When asked to circle the statement which was most important, only 57% (n = 152) identified the most stressful statement in the list.

Characteristics of family members who responded were compared to the 85 who did not respond shown in Table 15. Results revealed a few significant differences between those who responded and those who did not: ethnic background ($\chi^2 = 13.99$, $p = .007$), role ($\chi^2 = 15.94, p = .003$), living with patient ($\chi^2 = 3.93, p = .047$), and prior surgical experience ($\chi^2 = 7.34, p = .025$). The majority of family members who responded were White (82%), spouses or partners (84%), lived with the surgical patient (78%), and reported a bad surgical experience in the past (87%).

Table 15

Family Member Characteristics: Response versus No Response to Stress Statement

Characteristics	$n = 265$ Response	$n = 85$ No Response	Test/*p*-value
Age	Mean *(SD)*	Mean *(SD)*	$t = -0.06, p = .951$
	47.5 *(± 14.0)*	47.4 *(± 18.2)*	
Gender	Frequency *(%)*	Frequency *(%)*	$\chi^2 = 2.85, p = .091$
Male	77 *(29.1)*	33 *(38.8)*	
Female	188 *(70.9)*	52 *(61.2)*	
Marital Status			$\chi^2 = 3.52, p = .475$
Married	194 *(73.2)*	58 *(68.2)*	
Single	31 *(11.7)*	15 *(17.6)*	
Divorced/Separated	22 *(8.3)*	8 *(9.4)*	
Partnered/Not Married	14 *(5.3)*	2 *(2.4)*	
Widowed	4 *(1.5)*	2 *(2.4)*	
Ethnic Background			$\chi^2 = 13.99, p = .007$
White	168 *(63.4)*	37 *(43.5)*	
Hispanic	35 *(13.2)*	22 *(25.9)*	
Asian	31 *(11.7)*	17 *(20.0)*	
Black	10 *(3.8)*	3 *(3.5)*	
Other	21 *(7.9)*	6 *(7.1)*	
Family Member Role			$\chi^2 = 15.94, p = .003$
Spouse/Partner	112 *(42.3)*	20 *(23.5)*	
Parent/Guardian	79 *(29.8)*	37 *(43.5)*	
Child	42 *(15.8)*	11 *(12.9)*	
Sibling	13 *(4.9)*	5 *(5.9)*	
Other	19 *(7.2)*	12 *(14.2)*	
Live with Surgical Patient			$\chi^2 = 3.93, p = .047$
Yes	206 *(77.7)*	57 *(67.1)*	
No	59 *(22.3)*	28 *(32.9)*	
Miles from Hospital			$\chi^2 = 2.94, p = .402$
< 10	37 *(14.0)*	11 *(12.9)*	
10 – 100	128 *(48.3)*	44 *(51.8)*	
100 – 200	53 *(20.0)*	21 *(24.7)*	
> 200	47 *(17.7)*	9 *(10.6)*	
Number in Household	Mean *(SD)*	Mean *(SD)*	$t = 1.90, p = .058$
	3.3 *(± 1.4)*	3.6 *(± 2.1)*	

Table 15 (*continued*)

Characteristics	*n* = 265 Response	*n* = 85 No Response	Test/*p*-value
Education	Frequency *(%)*	Frequency *(%)*	$\chi^2 = 9.92, p = .078$
Elementary	5 *(1.9)*	3 *(3.5)*	
Some High School	12 *(4.5)*	8 *(9.4)*	
High School	45 *(17.0)*	23 *(27.1)*	
Some College	83 *(31.3)*	24 *(28.2)*	
College Degree	71 *(26.8)*	17 *(20.0)*	
Post-Graduate	49 *(18.5)*	10 *(11.8)*	
Employment			$\chi^2 = 1.90, p = .593$
Employed	174 *(65.7)*	52 *(61.2)*	
Retired	37 *(14.0)*	14 *(16.4)*	
Homemaker	29 *(10.9)*	13 *(15.3)*	
Unemployed	25 *(9.4)*	6 *(7.1)*	
Annual Household Income			$\chi^2 = 6.60, p = .086$
< $20,000	51 *(19.2)*	17 *(20.0)*	
$20,000 - $40,000	54 *(20.4)*	26 *(30.6)*	
$40,001 - $75,000	73 *(27.5)*	25 *(29.4)*	
> $75,000	87 *(32.7)*	17 *(20.0)*	
Religious Affiliation			$\chi^2 = 5.14, p = .274$
Christian	143 *(54.0)*	49 *(57.6)*	
No religion	66 *(24.9)*	15 *(17.6)*	
Buddhist	7 *(2.6)*	6 *(7.1)*	
Jewish	8 *(3.0)*	3 *(3.5)*	
Other	41 *(15.5)*	12 *(14.2)*	
Surgical Experience			$\chi^2 = 7.34, p = .025$
Good experience	162 *(61.1)*	51 *(60.0)*	
No experience	55 *(20.8)*	27 *(31.8)*	
Bad experience	48 *(18.1)*	7 *(8.2)*	
Surgical Severity			$\chi^2 = 5.95, p = .051$
High	90 *(34.0)*	19 *(22.4)*	
Medium	91 *(34.3)*	28 *(32.9)*	
Low	84 *(31.7)*	38 *(44.7)*	
Major Instruments	Mean *(SD)*	Mean *(SD)*	
Anxiety	39.3 *(± 11.9)*	38.6 *(± 11.0)*	$t = -0.46, p = .644$
Family Function	15.0 *(± 3.7)*	14.2 *(± 4.7)*	$t = -1.67, p = .095$
Perceived Support	16.4 *(± 4.2)*	15.6 *(± 4.6)*	$t = -1.43, p = .155$

Frequency and Significance of Self-Reported Stressors

Each hand written response provided by the 265 family members was divided into subcategories and listed first by frequency and then by significance shown in Table 16.

Table 16

Self-Reported Stressors Compared to the MOST Stressful

Listed as Stressful	Frequency *(%)*
1. Outcome/Result	62 *(23.4)*
2. Travel & Lodging	48 *(18.1)*
3. Physical Condition	44 *(16.5)*
4. Caring for Others	43 *(16.2)*
5. Finances/Money	38 *(14.3)*
6. Work/Job	36 *(13.6)*
7. Emotional Status	31 *(11.7)*
8. Complications	30 *(11.3)*
9. Waiting	28 *(10.6)*
10. Uncertainty	26 *(9.8)*
11. Pain	25 *(9.4)*
12. Recovery	23 *(8.7)*
13. Doctors	23 *(8.7)*
14. Death/Loss	22 *(8.3)*
15. Surgery/Anesthesia	22 *(8.3)*
16. Scheduling/Appts	19 *(7.2)*
17. Individual Concerns	16 *(6.0)*

Circled as MOST Stressful	Frequency *(%)*
1. Outcome/Result	26 *(17.1)*
2. Physical Condition	21 *(13.8)*
3. Caring for Others	12 *(7.9)*
4. Death/Loss	10 *(6.7)*
5. Uncertainty	9 *(5.9)*
6. Complications	9 *(5.9)*
7. Waiting	8 *(5.3)*
8. Emotional Status	8 *(5.3)*
9. Surgery/Anesthesia	7 *(4.6)*
10. Recovery	7 *(4.6)*
11. Pain	7 *(4.6)*
12. Work/Job	7 *(4.6)*
13. Finances/Money	6 *(3.9)*
14. Travel & Lodging	6 *(3.9)*
15. Doctors	4 *(2.6)*
16. Scheduling/Appts	3 *(2.0)*
17. Individual Concerns	2 *(1.3)*

Substantiation of Self-Reported Stressors

Written responses by 265 family members have been used to describe different types of stressors. Quotations are presented from the questionnaires as exemplars along with descriptive information about the family member's age, role and the type of anticipated surgery. A review of section responses and correlations between categories are noted. After the discussion of each subcategory, three major themes emerge surrounding the surgical event, resource consumption and healthcare matters.

1. Outcome/Result

This category highlights the way family members perceive a surgical procedure – as a focal point for the patient's illness. The surgical 'event' may help or harm, but will inevitably change the patient. Outcome is described with a positive or negative nuance as family members anticipate the patient 'getting better or getting worse'. Outcome is the most popular response regardless of gender, marital status, family member role, ethnic background, educational level, employment status, income level and religious affiliation, regardless of past surgical experience. Statements about outcome/result were significantly and positively correlated to statements about recovery ($r = .15, p = .01$).

> "Concern about outcome of surgery."
> *59 year old husband – Hand Surgery*

> "Worried about the outcome of the surgery for my daughter. Anticipation of handling the outcome."
> *72 year old mother – Mastectomy*

> "Not knowing if he has a tumor and the outcome."
> *67 year old wife – Pancreaticoduodenectomy*

2. Physical Condition of Patient

Responses in this category indicate that family members' concern with patients' physical health has many facets, and shows a concern for the implications of the illness to

the patient and family life. They tend to fall into three broad categories: understanding the nature and/or progression of the illness, concern about whether the patient will be able to function normally or communicate after the illness, and worrying about possible lifestyle changes or care that may be required as a result of surgery. The physical condition of the patient was significantly and positively related to satisfaction with family functioning ($r = .11, p = .05$).

> "To find the right diagnosis for the problem."
> *25 year old wife – Mass Excision and Biopsy*
>
> "Concerns about loss of ability."
> *48 year old partner – Hand Surgery*
>
> "Concerns about her ability to function as my friend, wife, companion, lover and mother to our boys – post surgery If she can't she won't be happy."
> *39 year old husband – Craniotomy*

3. Caring for Others

Statements reveal the complex nature and the potentially far-reaching effects of a patient's illness and the accompanying surgical procedure on the family member's ability to care for others. Family concerns that are potential stressors, such as childcare or caring for the elderly, marital problems, financial commitments, cooperation and support from other family members and family events like births or trips, seem to amplify anxiety over the patient's upcoming surgical procedure. Family members who had college degrees, made > $40,000 a year, were siblings and did not live with the surgical patient most commonly mentioned caring for others. These statements were also significantly and positively related to responses about waiting ($r = 11, p = .05$) and work/job ($r = .22$, $p = .01$).

> "Trying to deal with my son's departure on an overseas trip the same week I am trying to help my sister prepare for major surgery."
> *54 year old sister – Anterior Posterior Spinal Fusion*

"Worrying about who will take care of our children while I am at the hospital."
45 year old wife – Adrenalectomy

"I know my mother is concerned for my father and I hope his surgery will not be too stressful for her. Coordinating care with my siblings, how to arrange enough care for my father and still have the time I need for my own family and children -14 & 11 yrs."
47 year old son – Coronary Artery Bypass Grafting

4. Death/Loss

Not every surgery carried the risk of death or loss, however the small group of 22 family members who responded in this category reported the highest percentage of being 'most stressful' second only to 'physical condition'. As well as their own sense of loss, respondents were also concerned with other family members' sense of loss and how they might cope with the practicalities (i.e., funeral arrangements, insurance, wills) of losing a loved-one. Death/loss was significantly and positively related to individual concerns ($r = 18, p = .01$)

"I am stressed, frightened and nervous about this surgery. I cannot imagine my life without my mom."
65 year old daughter – Wide Excision of Melanoma

"Afraid of losing my spouse. Afraid of having to raise a 9-year-old son alone or without a father."
40 year old wife – Pancreaticoduodenectomy

"Concern that my wife will die either from cancer or surgery. How will I continue on if my wife were to die?"
57 year old husband – Craniotomy

5. Uncertainty

What unites this section is the almost universal uses of the terms 'uncertain' and 'not knowing', together with the suggestion that further information from medical professionals could help alleviate some of these anxieties. Uncertainty was significantly and positively related to higher anxiety scores ($r = .11, p = .05$).

"Uncertainty about her future ability to raise our children
Uncertainty about her health/future."
37 year old husband – Craniotomy

"Not knowing exactly what is going to happen."
36 year old mother – Pyeloplasty

"Unknown complexity of surgery until it happens."
52 year old wife – Adrenalectomy

6. Complications

Family members' comments in this section reflect a certain level of sophistication. Many respondents make reference to previous surgeries or display an awareness of the importance of pre- and post-surgical information and treatment. Although further medical information might not alleviate these worries, the responses indicate that counseling or an opportunity to discuss potential complications might be valuable. Statements about complications were significantly and positively correlated with statements about recovery ($r = .13, p = .05$).

"Complications during or after the surgery."
40 year old daughter – Thyroidectomy

"Fear of surgical complications."
26 year old mother – Dental Restorations

"Careful procedure and treatment prior to, during and after the surgery to minimize any possible side effects or infections."
39 year old sibling – Lung Resection

7. Waiting

This category is split into two key areas: the first is the frustration and anxiety experienced in waiting for a diagnosis, appointments and the surgery itself. The second, which is of particular concern to medical professionals, is the lack of communication and unexpected delays experienced by patients waiting for treatment. Waiting was

significantly and positively correlated to dealing with doctors ($r = .13$, $p = .05$) and caring for others ($r = .11$, $p = .05$).

> "Waiting for surgery. The tumor is growing in her head every day and waiting two weeks for surgery is very difficult. Tick – Tick."
> *39 year old husband – Craniotomy*

> "Length of time from diagnosis to actual surgery."
> *55 year old wife – Nephrectomy*

> "Urgency of the operation and then waiting to see when and what would be done – delays in communication."
> *54 year old wife – Cervical Spinal Fusion*

8. Emotional Status of Patient

These responses highlight a concern for the patient's emotional status and addresses specific feelings of the patient including anxiety, nervousness, stress, fear, hopelessness, anger and depression. The statements alluded to an emotional connection in the family member-patient relationship.

> "I don't want for him to be anxious or afraid."
> *34 year old mother – Hydrocelectomy*

> "My wife's emotional well being."
> *48 year old husband – Mastectomy*

> "His feeling of hopelessness."
> *57 year old wife – Cervical Spinal Fusion*

9. Surgery/Anesthesia

Statements in this section specifically mentioned surgery and anesthesia. In contrast to the patient's emotional response, the words fear, anxiety, nervousness and worry are used repeatedly used to describe the family member's emotional response in this section, indicating a strong negative reaction to the prospect of the procedure.

> "Anxiety regarding extent of injury and worry about surgery and anesthesia."
> *53 year old mother – Open Reduction of Femur Fracture*

"Nervousness about decision to have surgery for son."
24 year old mother – Hypospadius Repair

"Fear of the surgery process."
30 year old husband – Atrial Septal Defect Closure

10. Recovery

Recovery and recuperation were mentioned in terms of time and caregiving responsibility. Family members were especially concerned about the length of time it will take for the patient to heal and often expressed frustration at lack of information, or a timetable. Recovery statements also included ruminations on the amount of care required after surgery, the responsibilities of the family member for caregiving and the responsibility of the patient for self-care. Recovery was significantly and positively correlated to both outcome/result ($r = .15, p = .01$) and complications ($r = .13, p = .05$).

"How much time for recovery?"
55 year old father – Le Fort Osteotomy

"Anticipating the recovery period is stressful.
How much care will my father need?
Will he recuperate as quickly as expected?"
47 year old son – Knee Arthroplasty

"Patient, my daughter, will guard herself from injuries & stress to prepare herself for post-surgery recovery – e.g., reduce her summer job workload currently about 10hr/day, get 8 hrs sleep instead of staying out late."
58 year old father – Thyroidectomy

11. Pain

This section highlighted the difficulty that family members experienced witnessing the patient in pain. Common words in statements included 'watching', 'seeing', 'enduring', 'excruciating pain', and 'hoping for minimum discomfort'. Statements about pain were significantly and positively related to dealing with doctors ($r = .11, p = .05$).

"Seeing loved one in pain."
78 year old wife – Laminectomy

"Watching him go through this and seeing the pain and knowing he will have problems after surgery. Seeing him hurt."
65 year old mother – Facial Reconstruction

"Grandma being in so much pain, it's hard to see and I feel helpless."
24 year old grand-daughter – Esophagectomy

12. Work/Job

Family members frequently discussed arranging work to be able to support a patient undergoing surgery. Work/job was significantly and positively correlated with caring for others ($r = .22, p = .01$) and surgery/anesthesia ($r = .11, p = .05$).

"To work late to be able to take time off for appointments for family member having surgery."
52 year old daughter – Knee Arthroplasty

"I quit my job to care for my wife."
53 year old husband – Craniotomy

"Taking the days off from work in order for my daughter to have the surgery. My work being 2 days behind."
27 year old mother – Hardware Removal, Pins-Screws

13. Finances/Money

Financial concerns seemed to be mentioned both in relation to and apart from the surgical experience. Financial concerns seemed to be exacerbated by the surgical event. Finances/money were significantly and positively correlated with higher anxiety score ($r = .11, p = .05$) and negatively correlated with higher scores on family function ($r = -.11, p = .05$).

"Finances – always a worry no matter what."
44 year old wife – Laminectomy

"Money management of my household needs."
45 year old wife – Cardiac Radio-frequency Ablation

"Financial stresses, even though insurance covers hospital –many other expenses (food, gas, lodging)."
49 year old wife – Aortic Valve Replacement

14. Travel & Lodging

Surprisingly, travel and lodging were mentioned most frequently by family members, second only to 'Outcome/Result'. However, this topic was only circled as most stressful by six individuals. Family members, who lived > 100 miles from the hospital, were divorced or separated, of Hispanic background and in 'other' family roles (i.e., uncles, nieces, cousins and grandparents) commonly made statements in this category. Travel and lodging were significantly and negatively related to high anxiety scores ($r = -.13, p = .05$) and positively correlated to higher family function scores ($r = .13, p = .05$). Comments about travel and lodging were also correlated with statements about scheduling/appointments ($r = .12, p = .05$).

"Driving in the city. Finding a parking spot."
33 year old mother – Dental Restorations

"A car to get here and a room to stay in."
52 year old mother – Ventriculoperitoneal Shunt Revision

"Traffic to get here. Place to stay overnight."
72 year old wife – Carotid Endarterectomy

15. Doctors

Statements in this section highlighted the importance of trusting/feeling confident in the physician chosen to do the surgery, good communication with the doctor, and anxiety about unfamiliar doctors. Most statements discussed either the presence or absence of interpersonal relationships with the surgeon. Statements about dealing with doctors were also correlated with waiting ($r = .13, p = .05$) and statements about pain ($r = .11, p = .05$).

"Difficult to get in touch with the doctor."
49 year old daughter – Craniotomy

"I don't know this doctor well and he really does not know much about me or the family."
46 year old mother – Mastoidectomy

"Doctor intimidation and feeling he's working on us, not with us."
60 year old wife – Transurethral Resection of Prostate

16. Scheduling/Appointments

Scheduling was a term used to discuss arranging appointments, the surgery and follow-up visits. Appointments were mentioned as difficult to obtain, too frequent, not properly set up and there were elements of general confusion about registration, scheduling and the appointment process. Family members who mentioned scheduling/appointments were significantly and positively correlated to those who mentioned travel/lodging ($r = .12, p = .05$) and negatively correlated with higher anxiety scores ($r = -.11, p$ .05), indicating scheduling may be considered a 'hassle' with little overall importance to the anxiety score.

"All the appointments!"
49 year old daughter – Liver Resection

"Scheduling surgery to allow recovery before school term."
56 year old father – Craniotomy

"My mother not being told her authorization hadn't come through until late Friday afternoon before this Tuesday appointment. Her paperwork didn't come in the mail until Saturday."
37 year old daughter – Ventral Hernia Repair

17. Individual Concerns

Content in this section included the effects of the surgical procedure directly affecting the family member, worries about individual and personal reactions to the surgical event. Individual emotional and physical reactions to the surgeries were

disclosed. Issues included finding time to manage other life demands, the impact of surgery and lifestyle changes. Many felt a strong pressure to behave in certain ways or hide doubts and fears in order to facilitate a patient's recuperation, and family members' concerns that their own actions or lifestyle either contributed to the patient's illness or will have to 'keep up' with post-surgery changes in the patient's lifestyle. Individual concerns were significantly and positively correlated to statements about death/loss ($r = .18, p = .01$) and were mentioned most frequently by siblings and by family members who did not live with the patient.

> "It has been stressful having to sublimate my life while I arrange for all my mother's tests, pick up and return film, and keep track of all the details. The list of requirements leading up to the surgery has been extensive and is exhausting! Worrying about whether I will be able to manage all the other life demands on me (as well as finding time to relax & enjoy life) after the surgery as I am an only child and the buck stops with me."
> *58 year old daughter – Nissen Fundoplication*

> "So many changes are happening concurrent to this medical event that I am overwhelmed. There's no time for me."
> *48 year old wife – Craniotomy*

> "I can't be too emotional in front of my husband –I need to be stable for him no matter how I feel."
> *49 year old wife – Aortic Valve Replacement*

> "Trying to prepare for such a radical lifestyle change. I'm committed to help my partner stay healthy, so I will change my eating habits also. I have physical disabilities and I'm also obese, I worry that our relationship may change if I cannot keep up with her. Realistically, my weight loss will not be as great or swift as my partner's, (she's having gastric bypass), but her increased activity levels and the variety of her activities may exclude me."
> *54 year old partner – Gastric Bypass*

After extensive substantiation of subcategories, three primary themes were generated surrounding self-reported stressors: (1) Stress of the Surgical Event, (2) Stress of Resource Consumption, and (3) Stress of Healthcare Matters. The **Stress of the Surgical Event** includes the anticipated *outcome/result* of the *surgery/anesthesia* relative to patient's *physical condition* and *emotional status*. It may include *uncertainty* about the possibility of serious sequelae including *death/loss, complications*, *pain* and the *recovery* process. **Stress of Resource Consumption** includes internal obligations like *caring for others* in the family as well as external obligations like *work/job*, expenditures including *finances/money*, negotiating *travel and lodging* (often in unfamiliar areas), and *individual concerns* relative to the family member's resources to deal with the surgical event. **Stress of Healthcare Matters** includes anxious *waiting* for surgery, dealing with *doctors* and communication with healthcare professionals, and handling *scheduling/appointments* surrounding the surgical event.

The significance of the surgical event lies within the family member's cognitive appraisal of stressors associated with each surgery. Conclusions will be made about why some family members rate stressors as more important than others. More importantly, identifying what is most stressful may have future implications for healthcare providers. Direct attention to the underlying impetus for the anxiety response will help professionals target specific interventions for the family.

CHAPTER V: DISCUSSION

The findings of this study have provided a more comprehensive profile of family members than has been available previously within preoperative literature. To better understand the results, the significance of scores on major instruments and initial findings will be discussed. Predictors will then be presented which support and deviate from the stated study hypothesis and alternative predictive model. Limitations of the study will be delineated and finally, implications for nursing practice and directions for future research will be proposed.

Interpretation of the Findings

The mean scores of family members on the three major instruments can be interpreted by comparisons to established population norms and other preoperative studies. Anxiety scores on the S-STAI indicated that family members experience high anxiety prior to surgery. The mean anxiety score of 39.1 for this sample of 350 family members was higher than norms at 35.5 established by Spielberger (1983) for 1,838 working adults but lower than the mean anxiety of 41.1 first reported for 26 surgical patients (Spielberger et al., 1973).

Several recent preoperative studies with patients and parents of children have utilized the S-STAI for anxiety testing. Mean anxiety scores have been listed for comparison in Table 17. Scores that were reported for more than one preoperative group (i.e., treatment/control or male/female) were calculated by averaging the scores prior to any intervention performed. A total mean anxiety score from this study fell between two large patient investigations conducted with subjects undergoing a variety of different surgeries. Of interest, the highest and lowest mean anxiety scores were obtained from studies conducted with those of differing ethnic groups (i.e., Chinese and Italians).

Table 17

Comparison of Preoperative S-STAI Scores

S-STAI Mean Score	Preoperative Population	*(n)*	Source
52.6	Patients	*(80)*	(Mok & Wong, 2003)
47.8	Parents	*(50)*	(Chan & Molassiotis, 2002)
46.3	Parents	*(67)*	(Wang et al., 2004)
46.0	Patients	*(90)*	(Wang et al., 2001)
44.0	Parents	*(60)*	(Kain, Mayes, Weisman et al., 2000)
42.5	Parents	*(70)*	(Kain, Sevarino et al., 2001)
41.8	Parents	*(65)*	(Logan & Rose, 2005)
41.5	Patients	*(80)*	(Danino et al., 2005)
41.2	Parents	*(83)*	(Kain et al., 2003)
40.7	Patients	*(160)*	(Oshima et al., 2001)
40.4	Patients	*(93)*	(Wang et al., 2002)
39.9	Patients	*(60)*	(Bergmann et al., 2001)
39.3	Patients	*(712)*	(Caumo et al., 2001)
39.1	**Family Members**	***(350)***	
39.0	Patients	*(486)*	(Kindler et al., 2000)
38.2	Patients	*(100)*	(Giraudet-Le Quintrec et al., 2003)
35.8	Patients	*(190)*	(Koivula et al., 2002)
34.0	Patients	*(84)*	(Krohne & Stangen, 2005)
31.9	Patients	*(60)*	(Ghoneim et al., 2000)
30.5	Parents	*(76)*	(Messeri et al., 2004)

Family function score as measured by the Family APGAR indicated that family members had a high level of preoperative satisfaction. The mean Family APGAR score was 14.8 which fell between 13→20 and suggested high satisfaction with family functioning (Smilkstein et al., 1982). However, the mean score was lower than those demonstrated before cardiac surgeries as reported by Rankin (1988) and Gortner, et al (1988) at 17.5 and 17.4 respectively.

Perceived support scores on the PSS-Fa indicated that family members perceived satisfactory support from family prior to surgery. Unfortunately, the PSS-Fa has rarely been used in the preoperative setting. The mean PSS-Fa score of 16.2 demonstrated slightly more perceived support from the family as compared to a mean of 15.0 for

spouses of patients with prostate and breast cancer (Baider et al., 2003). The mean score of 16.2 was also higher than normative scores at 14.3 found in young nineteen-year-old college students who were away from home (Procidano & Heller, 1983).

Initial Findings

Two major distinctions have been made about family members from the initial findings: (a) results indicated that there was no significant difference between anxiety, function and support scores for family members of adult patients versus family members of children, and (b) no significant differences were found on scores based on age, marital status, living with the patient, the number of people in the household, distance in miles from hospital, education level, employment status, prior surgical experience, and type of surgery.

The first critical finding is that there was no significant difference in the scores on anxiety, family function and perceived support for family members of adult or child patients. This suggests that the time and attention previously spent in both research and clinical practice with parents of young children would do well to be extended to family members of adult patients. As there is compelling evidence to imply that parental anxiety can be an independent predictor of a child's anxiety (Kain, Mayes, Weisman et al., 2000; Wang et al., 2004) and that anxiety is a 'contagious' emotion (Planalp, 1999), it might be expected that adult family members would also experience a mutuality of emotion in the preoperative period.

The second finding was that there were no significant differences in scores on major instruments based on age, marital status, living with the patient, the number of people in the household, miles from hospital, education level, employment status, prior surgical experience, and type of surgery.

Prior patient research has contradicted these findings. For example, scores of 36 women after CABG who were significantly older than a comparison group of men, unmarried and living alone, expressed anxiety nearly three times as often on the S-STAI, as those in partnered relationships (Koivula et al., 2002). Another study of 734 patients predicted higher anxiety scores on the S-STAI for those without previous surgical experience or negative surgical experience (Kindler et al., 2000). Admittedly, variables that showed significance difference in patient studies may not have similar ramifications for the family member.

Discussion of Hypothesis and Alternative Predictive Model

The study hypothesis stated that family member anxiety was negatively related to satisfaction with family functioning, perceived support from family and age. Females and those of non-White ethnic background (e.g., Asians and Hispanics) were also expected to have more anxiety prior to surgery. The study hypothesis was not totally supported as results indicated that only satisfaction with family function was negatively and significantly related to anxiety. The fact that the entire model did not predict any more than 16% of variance in anxiety score may indicate how difficult it is to predict this emotion. Findings showed that perceived support from family, age, gender, and ethnic background were not statistically significant contributors to the model as hypothesized. Low variances for each of these independent variables simply reinforce the complexity of using anxiety as a dependent variable. In other words, emotion may fluctuate in severity based upon the cognitive appraisal of stressors at any given moment in the preoperative setting.

A further analysis was conducted to produce a better predictive model for family member anxiety and it seemed possible that this approach might explain a greater

variance. Indeed, a model including a new optimum linear combination of family function, religious affiliation, family member role, and surgical severity ($F_{8, 341} = 11.932$, $p < .001$) accounted for approximately 22% of the variance.

Family Function

Results of the hypothesis underscored the importance of family function as a significant predictor of anxiety. A high level of family member satisfaction with family function was associated with lower anxiety. After a regression analysis, satisfaction with family functioning was the only statistically significant variable in the first hypothesis predicting 5% of the variance in anxiety score above and beyond all other variables in the model. Family function was retained in the alternative predictive model but, in this model, family function did not overlap with any other individual predictors. Family function alone was responsible for 13% of the variance in anxiety score.

To validate this finding, Northouse (2000, 2002) also proposed a direct link between family function and distress. A direct effect implies a reciprocal influence, for example, high anxiety will have a negative relationship to function and high function will predict less anxiety. Similar to social support, family functioning can be incorporated into stress and coping theory as a moderator to cognitive appraisal. In other words, family functioning will act as an independent variable which will account for the variance in the dependent variable of anxiety.

Interestingly, the Family APGAR instrument used to measure satisfaction with family functioning was the only tool that demonstrated no significant group differences between all other variables under investigation. This may be considered a strength of this tool, as scores were not influenced by age, gender, marital status, ethnic background etc... The Family APGAR was short and easy to utilize within the preoperative setting.

The Family APGAR successfully measured the family members' overall satisfaction with functioning however, items on this instrument were not tailored to specific situations that may be encountered preoperatively.

Perceived Support

More perceived support from the family was related to less anxiety. Perceived support would have predicted 8% of the variance in anxiety if it was the only variable in original model but, because of high positive correlation with family function (r = .683) when the Family APGAR score was entered into the regression, perceived support became non-significant. As perceived support from family may overlap with essential elements of family function, it may be that the PSS-Fa and Family APGAR were measuring similar concepts. For example, social support is an important function of the family therefore items on these two instruments may overlap. Several of the statements contained in the PSS-Fa used similar wording (i.e., sharing 'interests' and 'solve problems') as found in the Family APGAR.

Examined on its own, the mean score on perceived support from family varied by gender. Females had significantly higher perceived support from family than males. In addition, more females family members (69%) tended to accompany the patient to a preoperative visit despite the fact that patients were both male (52%) and female (48%). This finding was supported in a recent preoperative investigation with surgical patients where 42 females reported significantly more support than 42 males (Krohne & Stangen, 2005). In contrast, after diagnosis for colon cancer Northouse et al., (2000) found that 52 females reported less perceived support on social support questions than males, regardless of role. Finally, Baider et al., (2003) found no significance difference between

females and males on the PSS-Fa, although 287 spouses did express significantly less perceived support than the patient diagnosed with breast or prostate cancer.

Although the PSS-Fa measured the level of a family members' perceived support, it might be just as useful to measure the family members perceived ability to provide support to the patient. Again, an instrument of social support whose items were tailored to specific experiences in the preoperative period might prove valuable. A weakness of the PSS-Fa was scoring each item on a dichotomous scale. For example, if a family member perceived support only 'sometimes' they were limited to the choices of either: 'yes = 1', 'no = 0' or 'don't know = 0'. A likert-type scale would yield more information about those family members who felt they did receive partial support some of the time.

Age, Gender & Ethnic Background

Prior studies have implicated age, gender and ethnic background as predictors of anxiety. Higher anxiety scores have been predicted for adults under 37 years of age (Kindler et al., 2000) and in those who are younger (Chan & Molassiotis, 2002; Edwards & Clarke, 2004; Wang et al., 2004). Females have reported more anxiety (Chan & Molassiotis, 2002; Edwards & Clarke, 2004; Kindler et al., 2000; Krohne & Stangen, 2005; Messeri et al., 2004; Northouse et al., 2000; Wang et al., 2004) and those of diverse ethnic background have been shown to exhibit wider variations in anxiety (Alferi et al., 2001; Bowman et al., 2003; Chan & Molassiotis, 2002; Messeri et al., 2004).

Yet, this investigation showed no significant differences in anxiety scores for family members based on age, gender and ethnic background. More specifically, there was no significant difference for family members less than 37 years of age compared to other age groups, between males and females, or groups of differing ethnic backgrounds. Even though the majority of family members were female (69%), as with other family

member investigations (Gilliss, 1984; Gortner, Gilliss et al., 1988; Moser & Dracup, 2004; Raleigh et al., 1990; Rankin, 1992), gender did not influence anxiety score. Finally, no significant differences in anxiety score were found based on ethnic background. Similarly, those few family members who answered questionnaires in other languages (i.e. Spanish and Chinese) did not exhibit higher anxiety scores.

Religious Affiliation

Although religion by group was a significant predictor of anxiety score, measurement by category is a rather crude index of the extent to which religious values, beliefs, and practices may be influential preoperatively. Religious affiliation by group does not assess the spirituality, religiosity, practice and church attendance of the family member (Flannelly et al., 2004). Diverging opinions were expressed in a comprehensive review of 17 studies, which revealed decreased anxiety, increased anxiety and no change in anxiety related to religious beliefs and practices (Shreve-Neiger & Edelstein, 2004). From a theoretical perspective, religious beliefs are included in the 'personal beliefs' inherent in primary appraisal of stressors expressed by Lazarus and Folkman (1984).

Family Member Role

The role held in the family in was also shown to be a predictor of anxiety. Family member roles included spouse/partner, parent or guardian, sibling, adult child, grand-parent, aunt or uncle, friend, step-mother or -father, step-sister or -brother, step-child, cousin, niece or nephew and other family members (e.g., daughter-in-law). Family member roles have been implicated in differences in stress scores (Cassileth et al., 1985; Gilliss, 1984; Gortner, Gilliss et al., 1988; Moser & Dracup, 2004; Raleigh et al., 1990; Rankin, 1988, 1992) which have been shown to superseded variables like age and gender. Yet, rarely have other family member roles in the preoperative setting been investigated

besides that of the spouse or parent. This study suggests that adult siblings exhibited less anxiety than spouses, parents and family members in other roles.

Surgical Severity

Surgical severity was only statistically significant when the anxiety scores for low/moderate severity were combined and compared to surgeries of high severity. One patient study ($N = 486$) supported that the type of surgery had a significant impact on preoperative anxiety as reported on visual analogue scales (Kindler et al., 2000). In contrast, a second large patient study ($N = 712$) found no significant associations between post-operative anxiety and surgeries classified as either minor, medium or major (Caumo et al., 2001). The variability of anxiety score may be related to the method of surgical classification, since no consistent method of categorization (i.e., high, medium and low) has been universally acknowledged. An alternative method to measure surgical severity would be to assess the family members' self-reported appraisal of the perceived surgical risk.

In summary, findings indicate that certain unexpected variables may influence anxiety. In fact, variables of religious affiliation, role and surgical severity may all be viewed in the context of the family. For example, age and gender are more individual predictors, whereas religious affiliation may be a 'shared' variable (i.e., a family shares religious beliefs). As demonstrated in prior studies (Cassileth et al., 1985; Gilliss, 1984; Gortner, Gilliss et al., 1988; Moser & Dracup, 2004; Raleigh et al., 1990; Rankin, 1988, 1992), role is a variable that is viewed in relation to the position in the family respective to other family members. Finally, the perception of surgical severity might also be a shared entity, together the family may define a surgical event as more serious or less important than it really is (Planalp, 1999).

Discussion of Self Reported Stressors

Subjective self-report captured the most frequently mentioned and most important stressors identified by family members prior to surgery. In order to assess the conceptual significance of these various stressors, it is important to demonstrate the process by which theoretical constructs have been validated. Findings about stressors support classic investigations by Holmes and Rahe (1967) and cognitive appraisal by Lazarus and Folkman (1984) including the buffering effects of family support.

Linkages between stressful life events listed by Holmes and Rahe (1967) and family members prior to surgery revealed similarities. Stressors like death, change in health of family member, work and mortgage were reported in relatively the same order as stressors reported by family members (i.e., Death/Loss, Patient's Physical Condition, Work/Job and Finances). Stressors also closely resembled those reported by couples prior to prostatectomy, including: (a) the process and outcomes of the surgery, (b) being in the hospital and (c) postoperative complications (Gray et al., 1999).

The variety of self-reported stressors also demonstrates the importance of family member appraisal prior to the surgical event. Cognitive appraisal determines the extent to which the situation is viewed as harmful, threatening, or challenging (Folkman & Greer, 2000). It is not just 'surgery' that precipitates anxiety but the appraisal of what impact this event will have. For example, the emotion of anxiety may arise from the anticipated surgical outcome relative to a patient's physical condition and emotional status, as well as uncertainties about post-operative complications including pain, loss and difficult recovery. In other words, the cognitive appraisal of surgery is the stressor and not the event itself.

According to Lazarus (1986) some events are perceived as more central to the person, hence more important in health outcomes, while others are considered 'daily hassles' -peripheral and of little relevance to overall health. This was evidenced when respondents were asked to 'circle the most important' stressor. Travel and lodging, finances/money and work/job, originally in the top 10 most frequently mentioned stressors, changed position with the bottom 10 in terms of importance. When comparisons were made, death/loss, surgery/anesthesia and recovery supplanted these in the top positions (see Table 18).

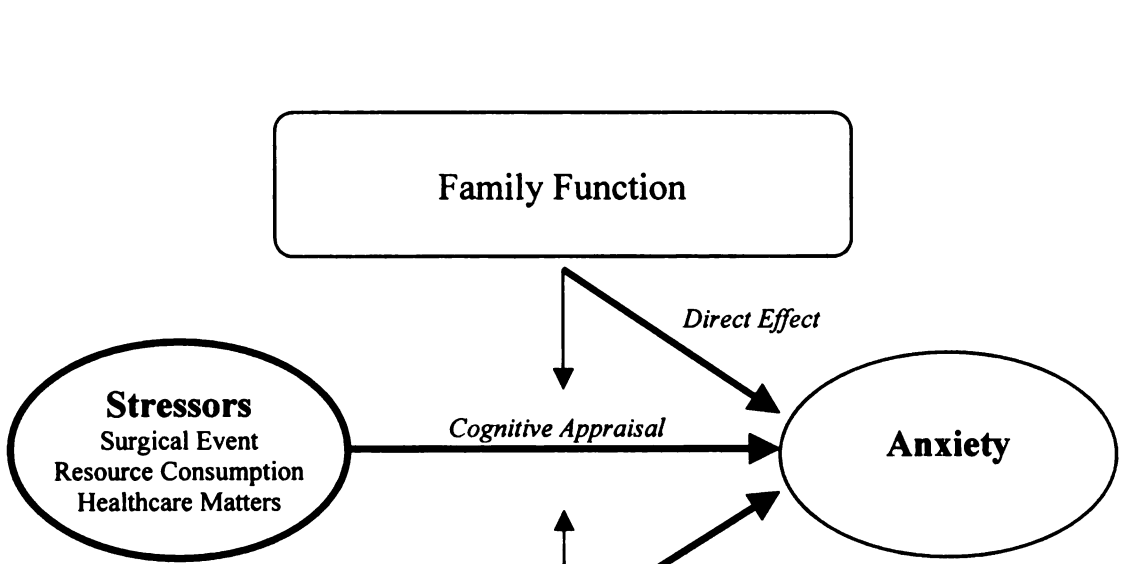
Table 18

Top 10 Self-Reported Stressors Compared to the MOST Stressful

Listed as Stressful	**Circled as MOST Stressful**
1. Outcome/Result	1. Outcome/Result
↓ 2. **Travel & Lodging**	2. Physical Condition
3. Physical Condition	3. Caring for Others
4. Caring for Others	↑ 4. **Death/Loss**
↓ 5. **Finances/Money**	5. Uncertainty
↓ 6. **Work/Job**	6. Complications
7. Emotional Status	7. Waiting
8. Complications	8. Emotional Status
9. Waiting	↑ 9. **Surgery/Anesthesia**
10. Uncertainty	↑ 10. **Recovery**

Lazarus and Folkman (1984) also believed social support played a major role in appraisal when resources were available (e.g., provision of information, problem solving techniques, and assistance with seeking professional services). Surprisingly, although the theme of resource consumption was frequently mentioned as stressful for family members, scores on the perceived support from family were generally high. In spite of this, however, the obligations of family members, including caring for others in the family, remained in the top 10 most frequently mentioned and most stressful factors.

Finally, a new model has been revised to reflect major findings (see *Figure 5*). Stressors surrounding surgery, not just the 'surgery' have been listed. In addition, relationships between family function, religious affiliation, family member role and surgical severity have been incorporated into the model.



Stressors

Surgical Event	Resource Consumption	Healthcare Matters
Outcome/Result	Caring for Others	Waiting
Surgery/Anesthesia	Work/Job	Doctors
Patient's Physical Condition	Finances/Money	Scheduling/Appointments
Patient's Emotional Status	Travel & Lodging	
Uncertainty	Individual Concerns	
Death/Loss		
Complications		
Pain		
Recovery		

Figure 5. Revised conceptual framework for family members prior to surgery.

Limitations of the Study

In examining the limitations and specific strengths of the study, the major issues for review include controlling for type of surgery and cross-sectional study design. The pitfalls of convenience sampling, and lack of reliability and validity of translated instruments, will also be discussed.

Although several studies were associated with specific surgeries (Alferi et al., 2001; Baider et al., 2003; Gilliss, 1984; Gortner, Gilliss et al., 1988; Gray et al., 1999; Northouse, Mood et al., 2002; Northouse et al., 2000; Raleigh et al., 1990; Rankin, 1988, 1992; Rankin & Monahan, 1991), this study did not control for type of surgery. The rationale for including a variety of surgeries was to improve generalizability. Although, this may be considered a strength, it may be argued that more homogenous set of procedures would make it easier to address surgery specific interventions.

This study was cross-sectional in nature and only described the family members experience during the preoperative hospital visit. This meant processes that evolved over time could not be inferred. For example, patients' anxiety measured on days leading up to surgeries predicted anxiety on the day of surgery (Badner et al., 1990; Johnston, 1980; Lichtor et al., 1987). A more accurate portrayal of family member anxiety might have been accomplished by collecting data at more than one point in time.

In addition, this study used the most conveniently available family member and participation was limited to the family member who accompanied the patient to the preoperative evaluation. In other words, those who were unable to attend a preoperative evaluation (e.g., needing to be at home, school or work) were excluded. The family member who accompanied the patient might be more anxious than those who elected to be elsewhere. Different perspectives from other family members might be more

comprehensive. In addition, even if more than one family member accompanied the patient to the hospital, only data from one family member were collected. As seen earlier, family members in different roles may have differing or similar results on psychometric measures. This study might have been strengthened by measuring the patient perspective along with the matched relative. A fuller description of both the patient and other family members may be indicated for future study.

Finally, this study attempted to include a variety of ethnic groups. Questionnaires were translated to try and capture non-English speaking participants. Instrument reliability and validity of some of the translated versions of the tools were not established. Although demographic data revealed that Asians (n = 48) and Hispanics (n = 57) were represented in this sample, only a few questionnaires were completed in Chinese (n = 5) and Spanish (n = 25). An incidental finding was that family members who accompanied a non-English speaking patient often served as the patient's translator. Hence, many family members were just as comfortable responding to the questionnaire in English.

Nursing Implications

As noted earlier, the patient is not the only one affected by the surgical event. Family members may also experience anxiety, alteration in family function and lack of perceived support in response to a patient's surgery. Implications for nurses will be discussed according to the major themes of stress surrounding the surgical event, resource consumption and healthcare matters. Along with these themes, nursing interventions for the reduction of stressors will be addressed in the context of family education, practice standards and hospital policies.

The **stress of the surgical event** includes the anticipated outcome of the surgery relative to the patient's physical condition and emotional status. It may include uncertainty about the possibility of serious sequelae including death, complications, pain and the recovery process. Family members may express emotions like anxiety, nervousness, worry, stress, uncertainty, not knowing, and fear about the surgical outcome. This emotion needs to be acknowledged and normalized.

It is imperative for nurses to develop sensitivity and understanding of the emotional manifestations of family members. Nursing assessments might include a description of family member anxiety. Use of short assessment tools (i.e., S-STAI) may be beneficial for routine screening of family members at preoperative visits in order to access anxiety early. For nurses, dealing with anxiety is not a new phenomenon and realistically, it might be easier to address reducing family member anxiety than to change the structure and process of family function and support.

Education is the most common intervention used by nurses. Because, families face multiple decisions and practical demands surrounding surgeries, information or knowledge of what to expect is invaluable. Several studies have encouraged preoperative education for both the patient and family member (Chan & Molassiotis, 2002; Dexter & Epstein, 2001; Dziurbejko & Larkin, 1978; Margolis et al., 1998; Raleigh et al., 1990; Silva, 1979). Information gathering is also considered an important family function. Although studies urge nurses and other health professionals to facilitate attempts to gather and synthesize information (Gray et al., 1999), some family members may use information as a coping mechanism (Lazarus & Folkman, 1984), while others may become overwhelmed. It has been recognized that people may vary in the timing or amount of information required (Leydon et al., 2000). As results suggest, nurses must

listen carefully to the type of stressors the family is facing and not immediately assume that distress is caused by a lack of information, easily solved by education.

Addressing self-reported stressors is a start. If family members find that worry surrounding the surgical outcome is most stressful, then anticipatory guidance on the realistic results and the opportunity to verbalize fears becomes important. Nurses must recognize the true etiology of anxiety, including listening carefully and determining the nature of the stressor. Whenever possible, family members should be included in the preoperative visit. Extra time and attention spent with the family may serve to reassure them by answering questions, reinforcing preoperative information and allaying anxiety.

Family members may also experience a **stress of resource consumption** which includes internal obligations like caring for others in the family as well as external obligations like their job, financial expenditures, negotiating travel and lodging, and individual concerns relative to the family member's resources. Again, practice standards about typical length of hospital stays, information about accommodation, maps, hotel and lodging lists, social work connections and other resources should be made available to the family.

The **stress of healthcare matters** includes anxiously waiting for surgery, dealing with doctors and communication with healthcare professionals, as well as managing and handling scheduling/appointments surrounding the surgical event. Here, the findings are not just limited to nursing practice, but have relevance to a variety of healthcare personnel that will come into contact with the patient's family. Attention to surgery timetables, itineraries, number and frequency of appointments, and primary care appointments that can be accomplished in closer proximity to the patient should be addressed. Trying to reduce excessive canceling and rescheduling of appointments and/or

surgeries may also decrease frustration. Even assisting families with tips for better communication with surgeons and anesthesiologists could be attempted.

Unfortunately, nurses are busy professionals with many responsibilities, and little discretionary time. With the increasing rates of surgeries, nurses have limited time in which to interact with families and contact with healthcare professionals is traditionally fragmented during the preoperative period (Cunningham et al., 2003). Nurses may view the emotional care of families as secondary to hospital routines, physical aspects of care and other demonstrable methods of treatment (Chesla, 1996; Jones, 2001).

To further complicate matters, even the process of giving reports to family members on the day of surgery has changed markedly. Healthcare institutions are now in compliance with the privacy rules of the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Even though family members need patient-specific information, the information that nurses can disclose to family members before, during and after surgery is now subject to federal privacy rules. Practically, this will mean that before the nurse interacts with a family member, they must know whether the patient has agreed to disclosure (Dexter & Epstein, 2001).

Traditional institutional boundaries like waiting rooms and visiting hours may need to be restructured to fit family needs. Within the hospital environment, isolated by architectural barriers, there is often little a family member can do but wait. Thus, recommendations for policy changes may, in future, be geared toward developing an infrastructure within the hospital setting which allows family members to become more involved and perceive a greater sense of control. Rigid practices concerning family member proximity, visiting and support must be openly called into question (Paavilainen et al., 2001). After all, an increase in satisfaction has been established when parents are

present for the induction of anesthetics (Chan & Molassiotis, 2002; Kain et al., 2003; Kain, Mayes, Weisman et al., 2000; Odegard et al., 2002; Wang et al., 2004). Another example is labor and delivery, where the presence of a family member has been integrated into routine care.

More importantly, a family-focused approach to preoperative nursing may not require learning new nursing methods or extra time (Paavilainen et al., 2001). Nurses already possess the skills and sensitivities to take notice of the families' roles and expectations within the hospital setting. In critical care, Redley et al., (2003) systematically reviewed 30 research articles concerning the needs of family members who accompanied a seriously ill patient into the hospital. Nurses were successful in dealing with families if they employed active listening skills and tried to identify family members at increased risk for distress. Findings supported generating a 'family-friendly' environment which included early and frequent contact and communication. Overwhelmingly, the consistent and coordinated approach to the care of families within the hospital was strongly recommended.

Unfortunately, lack of attention to family members in the preoperative setting may lead to the impairment of vital tasks like communication and companionship that help to sustain families as a whole. Nurses should do what they can to comfort and communicate with the family prior to surgery. "The nurse must be able to quickly establish a rapport with the patient and family, allay anxiety, provide education and reassurance, answer questions, act as a patient advocate, find resources for those without, and do it all in a seamless, pleasant, efficient and cost-effective manner" (Lancaster, 1997, p. 421). All of which supports the assumption that if family members are

sensitively integrated early into the preoperative experience, they will be strengthened in their capacity to optimize patient care and outcomes.

Future Research

Given harried preoperative climates and patient-centered care, addressing the concerns of the family is a formidable task. It is crucial however, that more investigations look beyond the patient to describe the family. It is important to document that family members do in fact experience presurgical anxiety. This uncomfortable emotion may even impact the family members' own health prior to a patient's surgery. In addition, the family members' own experience may be critical to the design, implementation and evaluation of future patient anxiolytic interventions. Efforts made to reduce patient anxiety in the days prior to surgery may be in vain, if the patient returns home to a highly anxious family climate.

Future investigations may show a stronger link between preoperative family member emotion and surgical outcome. Attitudes and supportive behaviors before surgery may be mutually interdependent. The problem with mutuality is a family member who shares the same strong emotion may not have any more emotional distance from the impending surgery than the patient (Planalp, 1999). If the assumption of mutuality is true (Cassileth et al., 1985; Kain, Mayes, Weisman et al., 2000), could it be that family member anxiety is just as predictive of surgical outcome as patient anxiety? In other words, the family's anxiety has the potential to intensify the patient's own worries, increasing surgical/anesthetic risk and postoperative complications like pain, delayed wound healing and increased length of hospital stay.

Healthcare interventions for the family member may in fact be most beneficial preoperatively rather than postoperatively. Several studies reported the highest level of

family member distress was demonstrated prior to surgery (Chan & Molassiotis, 2002; Kain et al., 2003; Kain, Mayes, Wang et al., 2000; Kain, Mayes, Weisman et al., 2000; Kain, Wang et al., 2001; Logan & Rose, 2005; Northouse et al., 2000; Raleigh et al., 1990; Rankin, 1988, 1992; Rankin & Monahan, 1991; Wang et al., 2004). Therefore, family-focused care should begin before surgery.

What seems most promising for future interventions is the utilization of the family as a resource to 'buffer' anxiety. Genuine caring and concern for the patient's suffering is the basis for an empathetic interaction which develops between family members when one of them becomes ill, and is one of the motivating factors for family members to offer support. What still remains unspecified is how to best harness family support, whether to increase the collective benefit of family member outpatient preparation programs or to create a more 'family-friendly' environment of care within the hospital. As this investigation suggests, family member anxiety does not differ with the patient's age, and the techniques and trends applied to family-focused care in pediatrics should not be ignored for adults.

Although the trend for family research is to examine caregiving as it develops after hospitalization, the importance of this investigation was to highlight the experience of family members during a preoperative hospital visit prior to surgery. Ultimately, the goal would be to address family member anxiety early while enhancing perceived healthcare support in order improve family function and transmit less preoperative distress to patients. In the end, surgery is a significant life event not just for the patient, but for the family member, as together they grapple with emotions and stressors that will impact their family's future.

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APPENDIX A

Family Member Questionnaire – English Version

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
AND MOUNT ZION MEDICAL CENTER
INFORMATION SHEET FOR RESEARCH SUBJECTS

Family Member Perspectives Prior to Surgery

A. PURPOSE

Doctors and nurses know very little about the experience of families before a patient has surgery. Sally Rankin, Ph.D. and Alice Butzlaff, R.N., in the Department of Family Health Care Nursing are conducting a research study to help better understand how families feel before surgery. You are being asked to participate anonymously in this study.

B. PROCEDURES

You will answer a questionnaire about the feelings families experience before a surgery. The questionnaire should take about 15 minutes to complete while you wait in this clinic.

C. RISKS/DISCOMFORTS

Some of the questions may make you think about unpleasant feelings.
You are free to decline any questions which make you feel uncomfortable.

D. BENEFITS

There will be no direct benefit from participating in this study. However, the information that you provide may help health professionals better understand families prior to surgery.

E. COSTS/PAYMENT

There will be no cost or payment for participation.

F. QUESTIONS

If you have further questions, you may call or contact Alice Butzlaff at (415) ___-____.
If for some reason you do not wish to do this, you may contact the UCSF Committee on Human Research, which is concerned with the protection of volunteers in research projects. You may reach the committee office between 8:00 am and 5:00 pm, Monday through Friday, by calling (415) 476-1814, or by writing to UCSF CHR, Box 0962, San Francisco, CA 94143.

PARTICIPATION IN THIS RESEARCH IS VOLUNTARY AND ANONYMOUS

You are free to decline or withdraw your participation at any point without any penalty or loss of benefits to which you are otherwise entitled.

DIRECTIONS

For each statement there are three possible answers: "Yes", "No", or "Don't Know"
Please circle the answer you choose for each item.

1. My family gives me the moral support I need..... Yes No Don't know
2. I get good ideas about how to do things or make things for my family..... Yes No Don't know
3. Most other people are closer to their family than I am..... Yes No Don't know
4. When I confide in the members of my family, who are closest to me, I get the idea that it makes them uncomfortable..... Yes No Don't know
5. My family enjoys hearing about what I think..... Yes No Don't know
6. Members of my family share many of my interests..... Yes No Don't know
7. Certain members of my family come to me when they have problems or need advice..... Yes No Don't know
8. I rely on my family for emotional support..... Yes No Don't know
9. There is a member of my family I could go to if I were just feeling down, without feeling funny about it later..... Yes No Don't know
10. My family and I are very open about what we think about things..... Yes No Don't know
11. My family is sensitive to my personal needs..... Yes No Don't know
12. Members of my family come to me for emotional support..... Yes No Don't know
13. Members of my family are good at helping me solve problems..... Yes No Don't know
14. I have a deep sharing relationship with a number of members of my family..... Yes No Don't know
15. Members of my family get good ideas about how to do things or make things from me..... Yes No Don't know
16. When I confide in members of my family, it makes me uncomfortable..... Yes No Don't know
17. Members of my family seek me out for companionship..... Yes No Don't know
18. I think that my family feels that I'm good at helping them solve problems.... Yes No Don't know
19. Other people's family relationships are more intimate then mine..... Yes No Don't know
20. I wish my family were much different..... Yes No Don't know

DIRECTIONS

Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now. There are no right or wrong answers.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady	1	2	3	4
20. I feel pleasant	1	2	3	4

DIRECTIONS

The following statements refer to satisfaction with one's family. Read each statement and then circle the appropriate number to the right of the statement. There are no right or wrong answers.

	NEVER	HARDLY EVER	SOME OF THE TIME	ALMOST ALWAYS	ALWAYS
1. I am satisfied with the help that I receive from my family when something is troubling me	0	1	2	3	4
2. I am satisfied with the way my family discusses items of common interest and shares problem-solving with me	0	1	2	3	4
3. I find that my family accepts my wishes to take on new activities and make changes in my life-style	0	1	2	3	4
4. I am satisfied with the way my family expresses affection and responds to my feelings such as anger, sorrow and love	0	1	2	3	4
5. I am satisfied with the way my family and I share time together	0	1	2	3	4

Please list at least three things that have been most stressful for you before this surgery. Circle the one which is most important:

1. _____

_____

_____

2. _____

_____

_____

3. _____

_____

_____

A Few Last Questions... Mark an X in the box that best describes **YOU**:

Your birthdate? (*month/day/year*) _____

Your gender?

- ☐ 1 Man
- ☐ 2 Woman

Your martial status?

- ☐ 1 Single
- ☐ 2 Married
- ☐ 3 Partnered, Not Married
- ☐ 4 Divorced or Separated
- ☐ 5 Widowed

Your ethnic background? _____

- ☐ 1 Asian
- ☐ 2 Black
- ☐ 3 Filipino
- ☐ 4 Hispanic
- ☐ 5 Native American
- ☐ 6 Pacific Islander
- ☐ 7 White
- ☐ 8 Other

Your relationship to the person having surgery?

- ☐ 1 Spouse or Partner
- ☐ 2 Parent or Guardian
- ☐ 3 Sibling
- ☐ 4 Child
- ☐ 5 Grandparent
- ☐ 6 Aunt or Uncle
- ☐ 7 Friend
- ☐ 8 Step-Mother or Father
- ☐ 9 Step-Sister or Brother
- ☐ 10 Step-Child
- ☐ 11 Cousin
- ☐ 12 Niece or Nephew
- ☐ 13 Other

Do you live with the person having surgery?

- ☐ 1 Yes
- ☐ 0 No

How many people live in your household? (*including you*) _____

How many miles do you live away from the hospital?

- ☐ 1 < less than 10 miles
- ☐ 2 10 - 100 miles
- ☐ 3 100 - 200 miles
- ☐ 4 > more than 200 miles

Check your highest level of education completed:

Elementary	☐ 1
Some High School	☐ 2
High School Diploma	☐ 3
Some College	☐ 4
College Degree	☐ 5
Post-Graduate Degree	☐ 6

Your employment status?

Employed	☐ 1
Unemployed	☐ 2
Homemaker	☐ 3
Retired	☐ 4
Student	☐ 5

Your gross annual (yearly) household income?

< less than $20,000	☐ 1
$20,000 - $40,000	☐ 2
$40,001 - $75,000	☐ 3
> more than $75,001	☐ 4

Your religious affiliation?

No religion	☐ 0
Buddhist	☐ 1
Christian	☐ 2
Hindu	☐ 3
Islam/Muslim	☐ 4
Judaism/Jewish	☐ 5
Spiritualism/New Age	☐ 6
Other	☐ 7

Have you had prior surgical experience?

No experience with surgery	☐ 0
Bad experience with surgery	☐ 1
Good experience with surgery	☐ 2

Thank you for your participation

APPENDIX B

Family Member Questionnaire – Spanish Version

UNIVERSIDAD DE CALIFORNIA, SAN FRANCISCO
Y MONTAJE ZION CENTRO MÉDICO
HOJA DE LA INFORMACIÓN PARA LOS TEMAS DE LA INVESTIGACIÓN

Perspectiva del miembro de la familia antes de la cirugía

A. PROPÓSITO

Doctores y enfermeras saben muy poco acerca de la experiencia familiar, antes que el paciente tenga cirugía. Sally Rankin, Ph.D. y Alicia Butzlaff, R.N., en el departamento del cuidado médico para la salud familiar, están conduciendo un estudio para ayudar a entender mejor cómo se siente la familia antes de la cirugía. A usted se le a pedido participar anónimamente en este estudio.

B. PROCEDIMIENTOS

Usted contestará un cuestionario acerca del sentir que las familias experimentan antes de una cirugía. El cuestionario debe tomar cerca de 15 minutos para completarlo, mientras usted espera en esta clínica.

C. RIESGOS/MALESTARES

Algunas de las preguntas pueden hacerle sentir una sensación desagradable.
Usted está en todo su derecho de no responder cualquier pregunta que le haga sentir esa sensación.

D. VENTAJAS

No habrá ventaja directa de participar en este estudio, sin embargo, la información que usted nos proporcione puede ayudar a profesionales de salud a entender las familias antes de la cirugía.

E. COSTOS/PAGO

No habrá ningún costo o pago para la participación.

F. PREGUNTAS

Si usted tiene otras preguntas puede llamar o ponerse en contacto con Alicia Butzlaff (415) ___-____ y, si por alguna razón usted no desea contestar este cuestionario, usted puede ponerse en contacto con el comité de UCSF sobre la investigación humana, la cuál se refiere a la protección de voluntarios en proyectos de investigación. Usted puede llamar a la oficina del comité entre 8am a 5:00pm, de lunes a viernes al (415) 476-1814, o escribiendo a UCSF CHR, apartado no 0962, San Francisco, CA. 94143.

LA PARTICIPACIÓN EN ESTA INVESTIGACIÓN ES VOLUNTARIA Y ANÓNIMA

Usted puede dejar de participar de esta investigación en cualquier momento, y sin ningún problema, usted no perderá las ventajas a las cuales tiene usted derecho.

DIRECCIONES

Para cada pregunta hay 3 respuestas posibles: "Sí", "No", o "No se"
Por favor circundan la respuesta que usted elige para cada.

1. Mi familia me da la ayuda moral que necesito..... Sí No No se
2. Obtengo buenas ideas de cómo hacer las cosas para familia.....Sí No No se
3. La mayoría de las otras familias están mas cerca, que yo de mi familia.....Sí No No se
4. Cuando confío en mi familia mas cercana, tengo la idea de que los hago sentir incómodos.....Sí No No se
5. A mi familia le gusta oír mis ideas..... Sí No No se
6. Mi familia y yo compartimos muchos intereses..... Sí No No se
7. Ciertos miembros de mi familia acuden a mí, cuando tienen algún problema o necesitan algún consejo..... Sí No No se
8. Dependo de mi familia cuando necesito ayuda emocional.....Sí No No se
9. Hay un miembro de mi familia que puede estar conmigo cuando me siento deprimido, sin reírse de mi después.....Sí No No se
10. Mi familia y yo platicamos sobre las cosas y de lo que pensamos sin ningún problema..... Sí No No se
11. Mi familia es sensitiva a mis necesidades personales.....Sí No No se
12. Los miembros de mi familia vienen a mí para ayudarme emocionalmente..... Sí No No se
13. Los miembros de mi familia son buenos para solucionar problemas..... Sí No No se
14. Tengo una relación profunda con un número de mi familia.....Sí No No se
15. Los miembros de mi familia tienen buenas ideas de cómo yo hago las cosas para mí.....Sí No No se
16. Cuando confío en miembros de mi familia, me siento incómodo..... Sí No No se
17. Los miembros de mi familia me buscan para que les haga compañía..... Sí No No se
18. Pienso que mi familia siente soy bueno en ayudarles a solucionar problemas.....Sí No No se
19. Los miembros de otras familias tienen relaciones mas cercanas que la mía..... Sí No No se
20. Deseo que mi familia sea mucho diferente.....Sí No No se

DIRECCIONES

Lea cada declaración y después circunde el número apropiado a la derecha para indicar cómo usted se siente ahora.
No hay respuestas correctas o incorrectas.

	Casi nunca	Algunas veces	Con frecuencia	Casi siempre
1. Me siento tranquilo	1	2	3	4
2. Me siento seguro	1	2	3	4
3. Me siento tenso	1	2	3	4
4. Me siento angustiado	1	2	3	4
5. Me siento que soy fácil de entender	1	2	3	4
6. Me siento enojado	1	2	3	4
7. Me estoy preocupando actualmente sobre posibles desgracias	1	2	3	4
8. Me siento satisfecho	1	2	3	4
9. Me siento asustado	1	2	3	4
10. Me siento cómodo	1	2	3	4
11. Me siento con confianza de mí mismo	1	2	3	4
12. Me siento nervioso	1	2	3	4
13. Me siento agitado	1	2	3	4
14. Me siento indeciso	1	2	3	4
15. Estoy relajado	1	2	3	4
16. Me siento contento	1	2	3	4
17. Estoy preocupado	1	2	3	4
18. Estoy confundido	1	2	3	4
19. Me siento estable	1	2	3	4
20. Me siento agradable	1	2	3	4

DIRECCIONES

Las preguntas siguientes se refieren a la satisfacción con su familia. Lea cada pregunta, y después circule el número apropiado a la derecha de la pregunta. No hay respuestas correctas o incorrectas.

	Nunca	Casi Nunca	A Veces	Casi Siempre	Siempre
1. Estoy satisfecho con la ayuda que recibo de mi familia cuando algo me está preocupando.....	0	1	2	3	4
2. Estoy satisfecho con la manera que mi familia discute temas del interés común, y comparte la solución de los problemas conmigo.....	0	1	2	3	4
3. Encuentro que mi familia acepta mis deseos para adquirir nuevas actividades y para realizar cambios en mi forma de vida.....	0	1	2	3	4
4. Estoy satisfecho con la manera que mi familia expresa el afecto y que responde a mis emociones tales como cólera, dolor y amor.....	0	1	2	3	4
5. Estoy satisfecho de la manera que mi familia comparte el tiempo junto	0	1	2	3	4

Enumere por favor por lo menos tres cosas que han sido las más agotadoras para usted antes de esta cirugía. Circule lo que es más importante:

1. _____

_____

_____

2. _____

_____

_____

3. _____

_____

_____

Algunas Ultimas Preguntas...

Marque con una X en el cuadro que lo describe lo mejor posible:

¿Su fecha de nacimiento? (mes/día/año) _____

¿Su género?

- ☐ 1 Hombre
- ☐ 2 Mujer

¿Su estado civil?

- ☐ 1 Soltero/a
- ☐ 2 Casado/a
- ☐ 3 Juntos, no casados
- ☐ 4 Divorciado o separado
- ☐ 5 Viudo/a

¿Su grupo étnica? _____

- ☐ 1 Asiático
- ☐ 2 Negro
- ☐ 3 Filipino
- ☐ 4 Hispano
- ☐ 5 Americano Nativo
- ☐ 6 Isleño Pacífico
- ☐ 7 Blanco
- ☐ 8 Otro

¿Su relación con la persona que esta teniendo cirugía?

- ☐ 1 Esposo/a
- ☐ 2 Padre/Madre
- ☐ 3 Hermano/a
- ☐ 4 Hijo/a
- ☐ 5 Abuelo/a
- ☐ 6 Tío/a
- ☐ 7 Amigo/a
- ☐ 8 Madrastra/Padrastro
- ☐ 9 Hermanastro/a
- ☐ 10 Hijastro/a
- ☐ 11 Primo/a
- ☐ 12 Sobrino/a
- ☐ 13 Otro

¿Usted vive con la persona que esta teniendo la cirugía?

- ☐ 1 Sí
- ☐ 0 No

¿Cuántas personas viven en su casa incluyendo usted? _____

¿A cuántas millas del hospital vives?

- ☐ 1 < menos de 10 millas
- ☐ 2 10 - 100 millas
- ☐ 3 100 - 200 millas
- ☐ 4 > mas de 200 millas

Nivel de educación más alto:

Primaria	☐ 1
Secundaria	☐ 2
Diploma de la escuela secundaria	☐ 3
Universidad	☐ 4
Grado de la universidad	☐ 5
Grado graduado	☐ 6

¿Estado de empleo?

Empleado	☐ 1
No empleado	☐ 2
Oficios domésticos	☐ 3
Retirado/a	☐ 4
Estudiante	☐ 5

¿Ingreso anual?

< menos de $20,000	☐ 1
$20,000 - $40,000	☐ 2
$40,001 - $75,000	☐ 3
> mas de $75,001	☐ 4

¿Religión a que pertenece?

Ninguna religión	☐ 0
Budista	☐ 1
Cristiano	☐ 2
Hindú	☐ 3
Islámico/Musulmanes	☐ 4
Judío	☐ 5
Spiritualista/Nueva Edad	☐ 6
Otro	☐ 7

¿Usted ha tenido experiencia quirúrgica anterior?

Ninguna experiencia con cirugía	☐ 0
Mala experiencia con cirugía	☐ 1
Buena experiencia con cirugía	☐ 2

Gracias Por Su Participación

APPENDIX C

Family Member Questionnaire – Chinese Version

加州大學三藩市分校
及西乃山醫療中心
提供研究者資料單章
未施手術前,病者家屬的體驗

A. 目的

由於醫生與護士在未施手術前，不什了解病者家屬對施手術的經驗，因此家庭健康護理系的 Rankin 博士及 Butzlaff 護士進行收集研究資料，以求了解病人家屬手術前的感受. 請用不記名的方式，參與這項研究.

B. 程序

請回答有關病人家屬手術前的問卷調查. 此問卷需時十五分鐘，可在您侯診時填寫.

C. 會影響情緒

如有些問題會令您產生不安的感受，您絕對有自由拒絕作答.

D. 回報

參與此項研究，對您不會有直接利益，並無實質回報. 但您所提供的資料有助醫護人員了解病人家屬手術前的心態.

E. 費用/報酬

參與此項研究，無需繳付任何費用，亦不會有任何報酬.

F. 問題

如有任何問題，可與 Butzlaff 護士聯絡(電話 415 ___-____). 如因任何原因，您不欲與 Butzlaff 護士聯絡，您可以與加州大學三藩市分校人類研究委員會接觸. 此委員會甚為關注保障自願參與研究者的權益. 您可於週一至五，上午八時至下午五時，與此委員會辦公室聯絡(電話 415 467-1814)，或去函 UCSF CHR, Box 0962,San Francisco, CA 94143.

參與此項研究是自願與不記名

您可以隨時退出，或拒絕參與此項研究而無任何懲罰或利益上的損失.

問卷指引

下列每題均有三個可能性的答案: “是”, “否”, 或 “不知”
請圈上您的答案.

1. 家人給與我所需的道義及精神上的支持..... 是 否 不知
2. 我有為我家人造事的好主意..... 是 否 不知
3. 我感到大多數人比我更親近其家人..... 是 否 不知
4. 當我向近親人傾訴心聲時, 我覺得他們感到不安..... 是 否 不知
5. 我的家人喜歡聆聽我的想法..... 是 否 不知
6. 我的家人與我共享很多我的興趣..... 是 否 不知
7. 當有個別家中成員遇到難題或需要忠告時, 他們會求助於我..... 是 否 不知
8. 我倚賴家人給我感情上的支持..... 是 否 不知
9. 當我感到不快時, 我可以向家中一成員訴說而事後並無不妥當的感覺..... 是 否 不知
10. 我與家人都能公開我們對事物的想法..... 是 否 不知
11. 我的家人感應到我的個人需要..... 是 否 不知
12. 我的家人会從我方面得到感情上的支持..... 是 否 不知
13. 我的家人能助我解決問題..... 是 否 不知
14. 我與家庭成員有深入分享的關係..... 是 否 不知
15. 我家中的成員從我處獲得處事的好主意..... 是 否 不知
16. 當我向家人傾訴時, 我會感到不安..... 是 否 不知
17. 我的家人找我作伴..... 是 否 不知
18. 我的家人應為我能為他們解決問題..... 是 否 不知
19. 別人與家人的關係比我的來得密切..... 是 否 不知
20. 我希望我的家庭是不一樣..... 是 否 不知

問卷指引

請從下到每題中，圈出與您現時最近傍的心情. 這是沒有“正確”或“不正確”的答案.

1 代表“從未有” 2 代表“有時” 3 代表“時常” 4 代表“慣常”

1. 我感到平靜..... 1 2 3 4
2. 我感到安全..... 1 2 3 4
3. 我感到緊張..... 1 2 3 4
4. 我感到勞慮..... 1 2 3 4
5. 我感到輕鬆自然..... 1 2 3 4
6. 我感到不安..... 1 2 3 4
7. 我現時憂慮不幸事情會發生..... 1 2 3 4
8. 我感到滿意..... 1 2 3 4
9. 我感到恐懼..... 1 2 3 4
10. 我感到安逸..... 1 2 3 4
11. 我感到自信..... 1 2 3 4
12. 我感到神經過敏..... 1 2 3 4
13. 我感到神經緊張..... 1 2 3 4
14. 我感到猶疑不決..... 1 2 3 4
15. 我感到鬆馳..... 1 2 3 4
16. 我感到滿足..... 1 2 3 4
17. 我感到擔心..... 1 2 3 4
18. 我感到迷茫..... 1 2 3 4
19. 我感到穩定..... 1 2 3 4
20. 我感到快樂..... 1 2 3 4

問卷指引

下列的問題是用以測試您對家庭的滿意情度，只需要圈上最適當的答案.
這是沒有“正確”或“不正確”的答案.

0 代表“從未有” 1 代表“偶然” 2 代表“有時” 3 代表“時常” 4 代表“慣常”

1. 當我有困擾事情時，我滿意家人給我的援助..... 0 1 2 3 4

2. 我滿意家人能與我商討共同興趣及解決難題..... 0 1 2 3 4

3. 我發覺我的家人接納我的意願去參與新的活動和改變
   我的生活方式..... 0 1 2 3 4

4. 我滿意我家人對我真情流露的方式及對我喜怒哀樂
   情緒的反應..... 0 1 2 3 4

5. 我滿意我家人對我共渡時光的方式..... 0 1 2 3 4

在病者施手術前，請列出最少三項令您最感壓力的事項，並圈上最嚴重的一項.

1. _____

_____

_____

2. _____

_____

_____

3. _____

_____

_____

最後的幾條問題. . . 請選擇最佳答案，並在方格上打上“X”：

出生日期?(*年/月/日*)_____

性別?
- 男 ☐ 1
- 女 ☐ 2

婚姻狀況?
- 未婚 ☐ 1
- 已婚 ☐ 2
- 同居伴侶 ☐ 3
- 離婚或分居 ☐ 4
- 寡居 ☐ 5

種族背景? _____

- 亞裔 ☐ 1
- 非裔 ☐ 2
- 菲律賓裔 ☐ 3
- 西班牙裔 ☐ 4
- 美洲土人 ☐ 5
- 太平洋島嶼裔 ☐ 6
- 白裔 ☐ 7
- 其他族裔 ☐ 8

接受手術病人與您的關係?

- 夫妻或同居伴侶 ☐ 1
- 父母或監護人 ☐ 2
- 兄弟姊妹 ☐ 3
- 兒女 ☐ 4
- 祖父母/外祖父母 ☐ 5
- 嬸伯母/叔伯父 ☐ 6
- 朋友 ☐ 7
- 繼父 ☐ 8
- 繼兄弟姊妹 ☐ 9
- 繼子女 ☐ 10
- 堂兄弟姊妹/表兄弟姊妹 ☐ 11
- 甥/姪 ☐ 12
- 其他 ☐ 13

接受手術病人是否與您同住?
- 是 ☐ 1
- 否 ☐ 0

您家裡有多少人? (*包括您在內*) _____

您離開醫院有多遠?
- 十 哩以下 ☐ 1
- 十 至 一百哩 ☐ 2
- 一百至 二百哩 ☐ 3
- 二百哩以上 ☐ 4

最高教育程度:

- 小學 ☐ 1
- 中學未畢業 ☐ 2
- 中學畢業 ☐ 3
- 大學未畢業 ☐ 4
- 大學畢業 ☐ 5
- 研究院學位 ☐ 6

職業狀況?

- 就業 ☐ 1
- 失業 ☐ 2
- 家庭主婦 ☐ 3
- 退休 ☐ 4
- 學生 ☐ 5

稅前家庭總年收入?

- 二萬以下 ☐ 1
- 二萬至四萬 ☐ 2
- 四萬至七萬五 ☐ 3
- 七萬五以上 ☐ 4

宗教?

- 無信仰者 ☐ 0
- 佛教 ☐ 1
- 基督教 ☐ 2
- 印度教 ☐ 3
- 伊絲蘭教/回教 ☐ 4
- 猶太教 ☐ 5
- 唯靈論/新時代教派 ☐ 6
- 其他 ☐ 7

您有過造手術的經驗嗎?

- 從未造過手術 ☐ 0
- 有不良的手術經驗 ☐ 1
- 有良好的手術經驗 ☐ 2

謝謝您的參與