

Une étude des réactions affectives négatives chez les personnes en attente d'une chirurgie

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Les longues périodes d'attente précédant une chirurgie sont associées à de nombreux effets négatifs. Bien que la dépression et l'anxiété aient fait l'objet d'études chez les patients en attente d'une telle intervention, les anxiétés fondamentales, comme la sensibilité à l'anxiété ou l'anxiété liée à l'état de santé, n'ont pas encore été étudiées. De plus, il existe peu de recherches sur le vécu des patients quant à la gestion de l'attente. Cette étude vise donc à examiner l'ampleur de la sensibilité à l'anxiété, de l'anxiété liée à l'état de santé, de la dépression et de l'anxiété, ainsi que leurs effets sur la capacité d'adaptation face à l'attente, les inquiétudes liées à celle-ci et l'anxiété face à la chirurgie, chez les individus en attente d'une telle intervention. Des personnes en attente d'une chirurgie ont répondu à un questionnaire mesurant ces construits. Les résultats ont révélé la présence d'un taux élevé d'anxiété liée à l'état de santé et de sensibilité à l'anxiété. Une analyse de régression a démontré que l'anxiété liée à l'état de santé et la dépression constituent des variables explicatives uniques pour ce qui est des capacités d'adaptation et que combinées, elles aident à établir le degré d'inquiétude face à l'attente. La sensibilité à l'anxiété et l'anxiété n'ont pas contribué aux prévisions de ces variables. Dans l'ensemble, les résultats suggèrent la nécessité d'accorder plus d'attention aux interventions qui se penchent sur la détresse psychologique vécue pendant le temps d'attente.

Mots clés : attente, chirurgie, anxiété, capacité d'adaptation

Examination of Negative Affective Responses to Waiting for Surgery

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Long surgical waiting times are associated with many negative consequences. Although depression and anxiety have been studied among patients waiting for surgery, fundamental anxieties, such as anxiety sensitivity and health anxiety, have not been examined. Furthermore, research into patients' perspectives on coping while waiting is limited. The purpose of this study was to examine the extent of anxiety sensitivity, health anxiety, depression, and anxiety and their influence on coping, concern about waiting, and anxiety about surgery in individuals waiting for surgery. Individuals waiting for surgery completed measures assessing these constructs. Results revealed a high degree of health anxiety and anxiety sensitivity. Regression analysis showed that health anxiety and depression are unique predictors of coping and together help to predict concern about waiting. Anxiety sensitivity and anxiety did not add to the prediction of these variables. Overall, the results suggest that further attention should be given to interventions that address psychological distress during the wait for surgery.

Keywords: waiting, surgery, anxiety, coping

Considerable waiting times for surgery are common in Canada. According to researchers at the Fraser Institute (2004), waiting times increased 92% between 1993 and 2004. Increasingly, we are acknowledging the substantial impact that waiting has on psychological functioning (Brownlow, Benjamin, Andrew, & Kay, 2001) and the loss of quality of life caused by progressive pain, immobility, disruption in the fulfilment of personal life goals, and feelings of helplessness and uncontrollability (Ackerman, Graves, Wicks, Bennell, & Osborne, 2005; Roy & Hunter, 1996).

Due to the non-emergent nature of elective surgery, waiting times are considerably longer for elective than for non-elective procedures (Hurst & Siciliani, 2003). Although many procedures are classified as elective by surgeons (Hurst & Siciliani, 2003), orthopedic surgeries, including hip and knee replacement and back surgery, have among the longest waits. According to researchers at the Fraser Institute (2004), the median waiting time for joint surgery in Canada in 2004 ranged, by province, from 24 weeks in Ontario and Quebec to 104 weeks in Saskatchewan. Back surgery also showed great variability, from 3 weeks in Manitoba to 24 weeks in Saskatchewan.

Individuals waiting for surgical procedures often show high levels of psychological distress. Researchers have found high levels of preoperative anxiety and depression in 20% to 50% of those waiting for hip replacement or back surgery (Arpino, Iavarone, Parlato, & Moraci, 2004; Brownlow et al., 2001; Pringle, Taylor, & Whittle, 1999; Sinikallio et al., 2006). This psychological distress is compounded by the fact that many patients are already anxious about their disease or illness, hospitalization, the use of anesthesia, or the surgical procedure itself (Panda, Bajaj, Pershad, Yaddanapudi, & Chari, 1996). Patients do have reason to be concerned or anxious about waiting, as longer waiting times have been associated with poorer surgical outcomes (Fortin et al., 2002; Hajat et al., 2002). Further, high levels of preoperative anxiety and depression are associated with increased pain, disability, surgical complications, failed surgery, and a prolonged stay in hospital (Block, Gatchel, Deardorff, & Guyer, 2004; den Boer et al., 2006; Holmes & House, 2000; Kohlboeck et al., 2004).

Despite growing research on the psychological consequences of waiting for surgery and the impact of psychological distress on surgical outcomes, the literature on anxiety in patients waiting for surgery is far from complete. Little attention has been given to different forms of anxiety. Anxiety is a multifaceted phenomenon that comprises thoughts, physiological responses, and behaviour. There are many types of anxiety. Most of the research described above focuses on trait anxiety, whereby a personality trait predisposes an individual to respond to a stressful situation with an anxiety response (Spielberger, 1983). Two other anxiety-related constructs have yet to be studied among patients waiting for elective surgery: anxiety sensitivity and health anxiety. Anxiety sensitivity, a vulnerability factor that predisposes certain individuals to develop anxiety disorders and a number of chronic health conditions, is defined as fear of the sensations associated with anxiety based on the belief that these may have catastrophic cognitive, physical, or social consequences (Reiss, Peterson, Gursky, & McNally, 1986; Taylor, 1999). Health anxiety is conceptualized as a dimensional construct characterized by a lack of concern about one's health at one end of the continuum and excessive anxiety at the other (Hadjistavropoulos, Owens, Hadjistavropoulos, & Asmundson, 2001).

The study of anxiety sensitivity and health anxiety in individuals on surgical waiting lists may help to predict which patients will have difficulty coping and which will develop psychological distress while waiting. It is quite possible that, compared to general anxiety and depression, these specific forms of anxiety are more predictive of concerns about surgery and anxiety. Because anxiety sensitivity is considered a vulnerability factor for subsequent anxiety experiences (Lilienfeld, Turner, & Jacob,

1993; Taylor, 1999), and because previous research has found increased anxiety in surgical patients (Arpino et al., 2004; Brownlow et al., 2001; Pringle et al., 1999; Sinikallio et al., 2006), anxiety sensitivity may also be present in this population and may play an important role in the response to surgical waiting times. In addition, health anxiety may be prominent in individuals waiting for surgery, as patients who are waiting experience a multitude of physical sensations, depending on their health condition, and health anxiety is known to influence the interpretation of bodily sensations (Warwick & Salkovskis, 1990).

In general, diathesis stress models (Zubin & Spring, 1977) suggest that negative affect, such as depression, anxiety, anxiety sensitivity, and health anxiety, combined with life stress, results in psychological difficulties (Zvolensky, Kotov, Antipova, & Schmidt, 2005). In relation to waiting for surgery, these models indicate that the combination of negative affect and the experience of waiting may predict who will have difficulty with the wait. The expectancy model of fear (Reiss, 1991) maintains that three fundamental fears — fear of negative evaluation, fear of bodily harm (e.g., health anxiety), and fear of anxiety (e.g., anxiety sensitivity) — predispose individuals to psychological difficulties, especially anxiety. Extrapolating from this model, health anxiety and anxiety sensitivity should be highly predictive of psychological difficulties, including difficulty coping with the experience of waiting for surgery.

Given the apparent risk of psychological distress while waiting for surgery, it is important to examine how individuals cope with the experience. Coping can be defined as the cognitive and behavioural ability to deal with particular demands, either internal or external, that are appraised by individuals as overwhelming their resources (Folkman & Lazarus, 1987). Researchers have used different dimensions to describe coping — for example, active or passive, emotion-focused or problem-focused. Generally, these concepts indicate similar strategies, with active or problem-focused coping involving efforts to change or resolve the problem and passive or emotion-focused coping involving responses to change an emotion, such as emotional preoccupation (Endler & Parker, 1990). Active or problem-focused coping tends to result in better outcomes, such as decreased depression and pain (Covic, Admansson, Spencer, & Howe, 2003; Young, 1992). Previous studies with individuals with health conditions, including conditions requiring surgery, have found that passive coping strategies are related to depressive symptoms and increased pain (den Boer et al., 2006; Hampson, Hampson, Glasgow, & Zeiss, 1996).

In this descriptive correlational study, we posed two primary questions: *Among patients waiting for surgery, what percentage experience elevated anxiety sensitivity and health anxiety and what percentage experience elevated*

depression and anxiety? Among individuals waiting for surgery, to what extent do anxiety sensitivity and health anxiety, as opposed to general anxiety and depression, predict concern about the wait, concern about the surgery, and coping responses? We collected additional data to determine what the participants might find helpful for dealing with the wait. It was hypothesized that, among individuals awaiting surgery, the levels of anxiety sensitivity and health anxiety would be higher than those for depression and anxiety, since the former are believed to be predisposing factors for other forms of anxiety. Drawing on models of fundamental fears, it was also hypothesized that, among individuals waiting for surgery, anxiety sensitivity and health anxiety would significantly predict more concern about the wait, anxiety about surgery, and maladaptive coping responses than general anxiety and depression.

Method

Participants

Of the 39 participants recruited, one was not included in the analyses due to a large amount of missing data (greater than 50%), leaving 38 participants in total. Participants ranged in age from 35 to 84 years with a mean age of 62.66 ($SD = 10.49$). Participants were mostly female (61%), married (68%), and living with their spouse or partner (79%). Most (82%) had a high school diploma or higher. Almost half (47%) were retired. At the time of the interview, they had been waiting for surgery an average of 7 months ($SD = 5.86$), with 29% waiting less than 4 months, 55% between 4 and 12 months, and 16% more than 12 months. The majority of participants were waiting for orthopedic surgery: knee replacement, 34%; hip replacement, 26%; shoulder surgery, 5%; spinal surgery, 16%; general surgery, 18%. Eighty-two percent of participants had had previous surgical procedures.

Procedure and Measures

The study was approved by institutional ethics boards. Participants were recruited through media advertisements and interviews, surgeons' offices, family doctors' offices, and seniors' centres. Participation took approximately 1 hour and involved one of two researchers administering the questionnaires described below in a face-to-face interview. (After completing the interview, participants reviewed various self-help materials; this review was not part of the purpose of this study but will inform our future research.) Participants received \$40 for their participation.

The *Short-Form McGill Pain Questionnaire* (SF-MPQ; Melzack, 1987) consists of three parts, but for the purposes of this study only the descriptors of pain was used (Melzack, 1987). This involved having participants

identify words that described their pain, for a total score ranging from 0 to 45. This measure correlates strongly with the longer and well-established MPQ (Melzak, 1987) and has good test-retest reliability (Grafton, Foster, & Wright, 2005). Internal consistency for the SF-MPQ in this study was $\alpha = .89$.

The *Pain Disability Index* (PDI; Pollard, 1984) is a brief measure in which participants rate interference in daily functioning due to pain on a scale from 0 to 10 in several areas: family/home responsibilities, recreation, social activity, occupation, sexual behaviour, self-care, and life-support activity. The total score ranges from 0 to 70. Researchers have found strong correlations between the PDI and other disability measures (Strong, Ashton, & Large, 1994). Internal consistency for the PDI in this study was $\alpha = .86$.

The brief *Anxiety about Waiting and Surgery Questionnaire* was designed for this study. Participants were asked, "Overall, how concerned are you about waiting for the surgery?" and "Overall, how anxious are you about the actual surgery?" They responded on a four-point scale (1 = not at all, 2 = somewhat, 3 = moderately, 4 = very). This type of measure has face validity and has been used by other researchers to capture anxiety related to surgical waiting time (Cox, Petrie, Pollack, & Johnstone, 1996). Participants were also asked an open-ended question, "What do you think would be helpful while you wait?"

The *Short Health Anxiety Inventory* (SHAI; Salkovskis, Rimes, Warwick, & Clark, 2002) is a comprehensive measure of health-related anxiety consisting of two subscales, a health anxiety scale (14 items) and a negative consequences scale (4 items), and correlates with other measures of health anxiety (Salkovskis et al., 2002). Since our interest was health anxiety, we used only the health anxiety scale, which results in scores ranging from 0 to 42. A score of 15 is approximately one standard deviation above the norm (Salkovskis et al., 2002), which was used to represent elevated health anxiety. Internal consistency for the SHAI in this study was $\alpha = .84$.

The *Anxiety Sensitivity Index* (ASI; Peterson & Reiss, 1992) is a 16-item measure of anxiety-related sensations. Using factor analysis, researchers have found evidence for one higher-order general factor (Zinbarg, Brown, Barlow, & Rapee, 2001). The total score on the ASI can range from 0 to 64 and scores above 27 are used to identify elevated anxiety sensitivity (Donnell & McNally, 1990). The ASI has been demonstrated to have good test-retest reliability and validity with regard to the association between the ASI and various anxiety disorders (Rodriguez, Bruce, Pagano, Spencer, & Keller, 2004). Internal consistency for the ASI in this study was $\alpha = .90$.

The *Hospital Anxiety and Depression Scale* (HADS; Zigmond & Snaith, 1983) measures depression (7 items) and anxiety (7 items) in hospital, outpatient, and community settings. Scores on each scale range from 0 to 21 and a cut-off of 11 or greater identifies those with highly probable clinical levels of anxiety and depression (Zigmond & Snaith, 1983). Both subscales have been demonstrated to have good internal consistency and test-retest reliability and acceptable convergent validity with widely used measures of anxiety and depression (Bjelland, Dahl, Tangen Hang, & Neckelmann, 2002). In this study, internal consistency was $\alpha = .84$ for the HADS-Anxiety (HADS-A) subscale and $\alpha = .87$ for the HADS-Depression (HADS-D) subscale.

The *Coping with Health Injuries and Problems Scale* (CHIP; Endler, Parker, & Summerfeldt, 1998) assesses four coping methods — distraction, palliative, instrumental, and emotional preoccupation — with each scale assessed by eight items rated on a five-point scale and total scores ranging from 8 to 40. Instrumental, palliative, and distraction coping are viewed as active or problem-focused coping, and emotional preoccupation is considered a form of emotion-focused coping. Endler et al. (1998) demonstrate good internal consistency, test-retest reliability, and construct validity for each subscale. Internal consistency for the subscales in this study was $\alpha = .85$, $\alpha = .67$, $\alpha = .80$, and $\alpha = .84$ for the distraction, palliative, instrumental, and emotional preoccupation subscales, respectively.

Results

First, we analyzed the data using descriptive statistics (means, standard deviations, frequencies), in order to understand the experiences of those waiting for surgery. Then we used correlational analyses to examine correlates of concern about waiting, anxiety about surgery, and coping strategies. Next, we used multiple regression analyses to examine the relative contributions of anxiety, depression, anxiety sensitivity, and health anxiety to concern about waiting, anxiety about surgery, and coping. Finally, we summarized the participants' suggestions for what they would find helpful for coping with the wait.

Descriptive Statistics

Descriptive statistics for the measures obtained from participants are presented in Table 1.

Concern/anxiety about waiting and about surgery. As seen in Table 1, participants gave higher ratings to concern about waiting than to concern about surgery. On average, 53% of participants were very concerned about waiting for surgery, 32% moderately concerned, 13% somewhat concerned, and 3% not at all concerned. When asked how anxious

Table 1 *Participants' Scores on Study Measures*

Scale (Range)	<i>M</i>	<i>SD</i>
Concern about waiting (1–4)	3.34	.81
Anxiety about surgery (1–4)	2.37	1.00
CHIP emotional preoccupation (8–40)	22.64	7.95
CHIP distraction (8–40)	26.45	7.27
CHIP palliative (8–40)	23.34	5.64
CHIP instrumental (8–40)	30.67	5.92
MPQ total score (0–45)	17.94	10.45
PDI (0–70)	32.86	15.21
ASI (0–64)	22.39	12.69
SHAI (0–42)	13.24	6.25
HADS-A (0–21)	7.57	4.30
HADS-D (0–21)	5.21	4.18

they were about the surgery, 16% indicated they were very anxious, 26% moderately anxious, 37% somewhat anxious, and 21% not at all anxious.

Coping strategies. Age-related norms for the CHIP coping measure (Endler & Parker, 1999) implied that participants in the present study scored in the average range for all forms of coping and slightly above average for emotional preoccupation.

Pain and disability. Surprisingly, nine of the 38 participants reported no pain or pain-related disability while waiting for surgery and did not respond to the MPQ or PDI. For the 29 participants who responded to these measures, examination of scores suggested that participants were experiencing moderate degrees of pain (e.g., average score of 17.94 [*SD* = 10.45] out of 40) and disability (average score of 32.86 [*SD* = 15.21] out of 70). The MPQ pain scores were not statistically different from scores obtained in other samples of hip and knee replacement patients (*M* = 18.90, *SD* = 1.87; Grafton et al., 2005), $t(84) = .68, p > .05$. PDI disability scores, however, were somewhat lower than scores obtained among patients with chronic pain (*M* = 41.9, *SD* = 13.9; Chibnall & Tait, 1994), $t(150) = 3.09, p < .05$.

Negative affect. In this study, 36.8% of participants had elevated anxiety sensitivity and 34% had elevated health anxiety scores. On the HADS, 21.05% of participants met the cut-off for anxiety and 10.53% met the criterion for depression.

Relationships among Study Variables

Relationships among study variables were evaluated by calculating Pearson correlation coefficients. We first examined the extent to which coping strategies, concern about waiting, and anxiety about surgery were related to background variables. Pearson Product Moment Correlations were used to examine how these variables correlated with length of wait for surgery and age. Point-Biserial Correlations were used to examine how these variables correlated with the following dichotomous variables (whether the participant was living with a partner/spouse, had a high-school education, and was retired). Only one significant relationship emerged: younger individuals expressed greater emotional preoccupation than older individuals, $r(38) = -.40, p < .05$. This suggests that very little variance in coping, concern about the wait, and anxiety about surgery is related to background variables, including length of time on the waiting list.

We next examined relationships between concern about waiting, anxiety about surgery, and coping and the negative affective variables measured in the study, namely anxiety sensitivity, health anxiety, and anxiety and depression (see Table 2). We also examined the relationship of these variables with pain and disability, but note that we had only 29 participants for this analysis since 9 of the participants denied having pain and disability. As recommended by Cohen (1988), we defined a strong correlation as greater than .50, moderate as .30 to .50, and weak as less than .30.

As seen in Table 2, concern about the wait was moderately related to depression and health anxiety, but not to general anxiety and anxiety sensitivity. Concern about the wait was strongly related to pain and moder-

Scale	MPQ	PDI	ASI	SHAI
Concern about waiting	.52*	.41*	-.30	.32*
Anxiety about surgery	.38*	.01	.44*	.47*
CHIP emotional preoccupation	.50*	.43*	.54**	.68**
CHIP distraction	-.18	-.28	.13	-.03
CHIP palliative	.33	.34	.25	.23
CHIP instrumental	-.05	-.05	.10	.07
* $p < .05$ ** $p < .001$				

ately related to disability. In comparison, anxiety about surgery showed significant positive associations of moderate strength with all measures of negative affect (anxiety, depression, anxiety sensitivity, and health anxiety) as well as pain. Examination of the correlates of coping strategies used during the waiting period revealed that coping using emotional preoccupation was the only strategy with multiple relationships to the measures of negative affect. Coping by using emotional preoccupation was strongly related to health anxiety, anxiety sensitivity, and anxiety and depression, as well as pain and disability. No relationships were found among measures of negative affect and instrumental coping and palliative coping. Distraction showed a negative moderate relationship to depression but was not related to other measures of negative affect.

Predicting, Concern about Waiting, Anxiety about Surgery, and Coping

Regression analyses were used to further examine the extent to which the variables of negative affect (e.g., anxiety, depression, health anxiety, anxiety sensitivity) predicted concern about waiting, anxiety about surgery, and coping (see Table 3). Given that only 29 participants reported

Table 3 Multiple Regression Results for Predictors of Concern about Waiting and Anxiety about Surgery and Emotional Preoccupation				
	Variables	B	β	R
Concern about waiting	HADS-D	.05	.27	.37*
	SHAI	.02	.18	.32*
Intercept = 2.75				
Anxiety about surgery	HADS-A	.06	.25	.47*
	HADS-D	.01	.03	.38*
	SHAI	.03	.19	.47*
	ASI	.01	.15	.44*
Intercept = 1.24				
Emotional preoccupation	HADS-A	-.30	-.16	.52**
	HADS-D	.82	.43*	.60**
	SHAI	.64	.50*	.68**
	ASI	.05	.08	.54**
Intercept = 11.19				
* $p < .05$ ** $p < .001$				

pain and disability, we were not able to consider these variables in the regression analyses. Since very few relationships were found among background variables and concern about the wait, anxiety about surgery, and coping strategies, background variables were also not considered in the regression analysis.

In the first regression analysis, we examined the extent to which the HADS-D and the SHAI predicted concern about waiting. The HADS-A and the ASI were not examined since no significant correlations between these variables and concern about waiting were found. Together, the HADS-D and the SHAI predicted 16% of the variance in concern about waiting, $F(2, 35) = 3.31, p < .05$. Neither the HADS-D nor the SHAI had unique predictive ability regarding concern about waiting.

In the second regression equation, we examined the extent to which the negative affective variables (ASI, SHAI, HADS-A, HADS-D) predicted anxiety about surgery. Together, the HADS-A, HADS-D, SHAI, and ASI predicted 16% of the variance in anxiety about surgery, $F(4, 35) = 3.31, p < .05$. There were no unique predictors of anxiety about surgery.

In the case of coping, we examined the negative affective variables that best predicted the tendency to cope using emotional preoccupation. We focused on this strategy since the above examination of the correlation matrix revealed few relationships between the other coping strategies and negative affect. In this regression analysis, we found that, together, the HADS-A, HADS-D, SHAI, and ASI predicted 55% of the variance in emotional preoccupation as a coping strategy, $F(4, 33) = 10.06, p < .001$. The HADS-D ($\beta = .43$) and the SHAI ($\beta = .50$) were statistically significant unique predictors of emotional preoccupation.

What Can Be Done during the Wait?

Participants were asked what would be of assistance to them while waiting for surgery. Their suggestions fell into two areas: those related to the waiting list, and those related to the provision of other services. For the waiting list, participants indicated a wish to receive information about their position on the waiting list ($n = 3$), a timeframe for their surgery ($n = 3$), information about the waiting list and how it was managed ($n = 1$), and more contact with the people in charge of the waiting list ($n = 3$). Additional services identified by participants as potentially useful were support groups ($n = 5$), pain management ($n = 3$), exercise programs tailored to their needs ($n = 3$), massage and physiotherapy ($n = 1$), and more information on their health condition and what to expect from surgery ($n = 2$).

Discussion

The goal of this study was to examine psychological functioning during the wait for surgery. Using well-established cut-off scores, we classified 21% of participants as anxious and 10.5% as depressed. Health anxiety was also examined, representing the first time this construct has been studied among patients waiting for surgery. An examination of participants' scores on the SHAI revealed that approximately 34% had elevated health anxiety. Previous studies with medical patients found similar rates of health anxiety (Grassi, Rossi, Sabato, Cruciani, & Zambelli, 2004). We also examined levels of anxiety sensitivity. The mean score on the ASI fell within a moderate range, with approximately 37% of participants classified as having elevated anxiety sensitivity. Previous studies have found elevated anxiety sensitivity in individuals with chronic health conditions, including gastrointestinal conditions, chronic pain, and recurring headaches (Asmundson, Wright, & Hadjistavropoulos, 2000). Our results suggest that these fundamental fears, which are considered to increase vulnerability to other psychological difficulties (Reiss, 1991), are elevated in individuals waiting for surgery.

Several statistically significant moderate-to-large correlations of interest were found despite the small sample size. Interestingly, concern about the wait had a moderate relationship to depression and health anxiety, but not to general anxiety or anxiety sensitivity. Anxiety about surgery had significant positive moderate relationships to all measures of negative affect (anxiety, depression, anxiety sensitivity, and health anxiety). An examination of coping strategies indicated that, unlike other coping strategies, emotional preoccupation had multiple relationships to the measures of negative affect. Emotional preoccupation revealed strong positive correlations with health anxiety, anxiety sensitivity, and anxiety and depression. These associations are not surprising, as they all focus on the emotional aspects of having a health condition or waiting for surgery. Interestingly, these relationships with negative affect were greater than relationships with background variables. Background variables, including length of time on the waiting list, were generally not significantly correlated with concern about the wait, anxiety about the surgery, or emotional preoccupation.

The relationship among the study variables was further examined using multiple regression analyses. These analyses were used to measure the relative contribution of the negative affective variables in predicting concern about the wait, anxiety about surgery, and emotional preoccupation while waiting for surgery. Of the negative affective variables, health anxiety and depression appeared to have greater value for under-

standing patient responses. Health anxiety and depression both uniquely predicted emotional preoccupation. They also predicted concern about the wait and anxiety about surgery, although there was overlap in the extent to which they predicted these variables. Health anxiety and depression, for instance, accounted for similar variance in concern about the wait. Health anxiety and depression also overlapped in the extent to which they explained variance in anxiety about surgery, and were similar to anxiety and anxiety sensitivity in this regard.

These findings were somewhat surprising as we had hypothesized that anxiety sensitivity and health anxiety would be unique and better predictors of coping, concern about the wait, and anxiety about surgery than anxiety and depression based on models of fundamental fears. We found only partial support for this in regard to health anxiety. It raises an interesting area for further research: to determine whether the predictive ability of these fundamental fears varies according to the stressful event. It could be that health anxiety is important for predicting responses to medical concerns whereas anxiety sensitivity shows greater predictive value in predicting responses to other types of stressful events (e.g., traumatic events). We were also surprised to find that depression had unique predictive ability for emotional preoccupation even though level of depression was generally found to be lower, in our study, than health anxiety, anxiety, and anxiety sensitivity. These findings support past research showing that, although they overlap in some ways, anxiety and depression are unique (Endler, Macrodimitris, & Kocovski, 2003); thus there is added value in assessing depression among patients waiting for surgery.

Overall, it proved more difficult to predict concern about the wait and anxiety about surgery (16% of variance explained) than to predict emotional preoccupation (55% of variance explained). Other variables are obviously important in determining concern about the wait and anxiety about surgery. In future research, it would be valuable to determine how much more variance in concern about the wait and anxiety about surgery would be accounted for by pain and disability. Other researchers have found concerns about waiting for surgery and anxiety about surgery to be related to current pain or concern about future pain (Ackerman et al., 2005; Moran, Khan, Sochart, & Andrew, 2003). As noted above, in the present study we were unable to assess the relative variance accounted for by pain and negative affect in concern about the wait and anxiety about surgery given that 24% of participants did not report pain.

Other important results from this study include the finding that patients have a great deal of concern about waiting for surgery, as 53% of participants indicated being very concerned about waiting. The majority

of participants (63%) were also somewhat to moderately anxious about the surgery itself. We asked participants what information they would find useful while waiting for surgery. In terms of the waiting list, many participants expressed a wish to receive further information about the waiting list and to have more contact with waiting list managers. Other researchers have also found that patients lack knowledge about the waiting process for elective surgery (Derrett, Paul, & Morris, 1999). Additional services identified by participants as potentially useful were pain management, exercise programs tailored to their needs, massage and physiotherapy, and more information about their health condition and the surgical procedure. Many participants cited the usefulness of support groups. Researchers have found support groups to be beneficial for quality of life in individuals undergoing surgery (Clarke, Frasure-Smith, Lesperance, & Bourassa, 2000; Feigin et al., 2000). Our results suggest that support groups may be a particularly valuable resource given the elevated levels of negative affect found.

Summary, Limitations, and Future Directions

The construct of health anxiety seems to be particularly relevant to waiting for surgery, with 34% of participants exhibiting significant health anxiety. Health anxiety was related to a tendency to cope using emotional preoccupation, concern about waiting, and anxiety about the surgery. Furthermore, it had unique predictive ability regarding emotional preoccupation. Although depression was elevated in fewer participants (10.5%) in the present study than in previous research (Brownlow et al., 2001), it was predictive of concern about the wait and anxiety about surgery and also showed unique predictive power with regard to emotional preoccupation. Anxiety sensitivity and anxiety were also elevated, with 37% of participants exhibiting elevated anxiety sensitivity and 20% demonstrating anxiety. Although these constructs were related to coping using emotional preoccupation and anxiety about surgery, they did not show unique predictive power. These results suggest that a focus on depression and health anxiety may help to improve efficiency in screening for psychological concerns while patients wait for surgery.

Some limitations with this study are apparent. In Canada, the provinces differ widely in the median length of waiting time for certain elective procedures (Fraser Institute, 2004). Due to long waiting times in Saskatchewan, where the study was carried out, the experiences of participants may have been different from those of individuals in other provinces. Another limitation is that the individuals who volunteered to participate may have had different characteristics, such as more active coping strategies, than those who chose not to volunteer. On the other hand, the individuals who chose to volunteer may have been particularly

stressed, frustrated, or anxious about waiting and thus participated because of the relevance of the study to their situation. Another limitation is the use of questions on concern about waiting and anxiety about surgery that were developed for this study. Although these questions have face validity and similar questions have been used by others (Cox et al., 1996), the reliability of the measures over time and extensive evidence regarding construct validity of the ratings are not available. Supporting the validity of the scales, the findings suggest that the scales captured what they were intended to measure, in that they were correlated in expected ways with variables measured in the study. A further limitation of this study is the fact that participants were not asked to provide information on pre-existing psychological conditions (e.g., depression, anxiety), which would have permitted examination of how pre-existing psychological problems affect the waiting experience. Finally, we should point out that the study was conducted with a small convenience sample and replication of the findings with larger, more representative samples would help to ensure generalizability. However, we did not find relationships where they did not exist (type 1 error) or fail to demonstrate relationships where they did exist (type 2 error).

Despite these limitations, this study has important implications. As waiting lists are common and sometimes long in Canada's health-care system, it is important that the resulting psychological distress be examined. Our findings offer insight into the needs of individuals who are waiting for surgery and help to identify factors, in particular depression and health anxiety, associated with coping using emotional preoccupation, concerns about waiting, and anxiety about surgery. This information can also be used to help tailor interventions for reducing the psychological impact of waiting for surgery. This information is important in the context of nursing, in that nurses often have a great deal of contact with individuals waiting for surgery. The influence of health anxiety and depression on coping with waiting and concern about surgery suggests that early assessment of these variables could help to reduce negative responses to the wait. In particular, the measures assessing health anxiety and depression that were used in this study are available to nurses and can be administered fairly quickly (e.g., HADS [Zigmond & Snaith, 1983]; SHAI [Salkovskis et al., 2002]). These tools could be used to screen for difficulties and refer the patient for more extensive psychological services. The HADS, for instance, is available for purchase from GL Assessment (<http://www.gl-assessment.co.uk/>) and a score of 11 is used to identify individuals with significant depression or anxiety, while the SHAI is available in the original publication (Salkovskis et al., 2002) and a score of 15 identifies individuals with health anxiety above the norm. As a first step, health providers who identify patients with health anxiety

or depression could refer them to self-help books. Research evidence supports the use of self-help materials for depression (Gregory, Schwer Canning, Lee, & Wise, 2004) and health anxiety (Jones, 2002). Self-help books for depression are plentiful and can be found in many bookstores or online. Manuals for health anxiety are more limited. However, the following two books can be found in bookstores or online: *Stop Being Your Symptoms and Start Being Yourself: The 6-Week Mind-Body Program to Ease Your Chronic Symptoms*, by Barsky and Deans (2006), and *Understanding Health Anxiety: A Self-Help Guide for Sufferers and Their Families*, by Kuchemann and Sanders (2001). A further option might be to refer patients with elevated health anxiety and depression for preoperative education, which has been found to significantly reduce anxiety (McDonald, Green, & Hetrick, 2004; Spalding, 2003). Pain education and management may also help to reduce negative affect (Oh & Seo, 2003).

In terms of future directions, in addition to the ideas mentioned above, it would be beneficial to follow individuals throughout the waiting period to examine fluctuations in emotions and coping in order to better inform treatment. Another avenue of research would be to explore the use of support groups in this population, as participants expressed an interest in this type of service. To our knowledge, support groups have not been examined in individuals waiting for elective surgery and may be particularly useful for this population, as waiting times can be considerable and negative affect is surprisingly common.

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