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# Impact of Sexual Dysfunction on Quality of Life Among Anxiety Disorder Patients

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ABSTRACT

Current research suggests that anxiety disorders may be associated with sexual dysfunction. This increased risk may carry important implications given the detrimental effect sexual dysfunction has been shown to have on quality of life in a variety of populations. However, no studies have examined the impact of sexual dysfunction on quality of life among anxiety disorder patients. Thus, in this study, participants were asked to complete questionnaires measuring quality of life, sexual functioning, and mental health. The data were used to compare quality of life between patients reporting sexual dysfunction and those reporting normal sexual functioning. Additionally, data were analyzed to explore the relationship between sexual dysfunction and other psychological factors. The results showed that, while overall sexual functioning was not significantly related to quality of life, specific areas of sexual functioning were correlated. The impact of these findings on the assessment and treatment of anxiety disorder patients will be discussed.

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# Introduction

## *Problem Statement*

Individuals with anxiety disorders have been shown to be at greater risk for experiencing sexual dysfunction. In particular, higher rates of sexual dysfunction have been found in individuals with phobia, panic disorder, generalized anxiety disorder (GAD), and obsessive-compulsive disorder (OCD) diagnoses than in the general population (Kaplan, 1987; Ware et al., 1996; van Minnen & Kampman, 2000). However, very little is known about the role sexual dysfunction plays in the life of anxiety patients. Although sexual dysfunction has been shown to have a detrimental effect on quality of life in a variety of populations, few studies have exclusively examined the impact of sexual dysfunction on quality of life among individuals with anxiety disorders.

Thus, the purpose of this study was to collect preliminary data on the effect sexual dysfunction has on these patients' quality of life. The findings of this research were useful in the process of achieving our long-term goal of determining whether sexual dysfunctions should be addressed in the treatment of these patients. The study also provided insight about patients' subjective perceptions of symptoms, as well as the objective impact of sexual dysfunction on patients' lives.

## *Literature Review*

The detrimental effect of anxiety on sexual arousal has been described extensively in the initial theories of sexual dysfunction. For example, based on their finding that anxiety hinders the physiological response involved in sexual arousal by obstructing the reception of sexual stimuli, Masters and Johnson (1970) identified anxiety as highly detrimental to sexual arousal. Similarly, Kaplan (1974, 1988) cited anxiety's disrupting effect on autonomic

nervous system functioning as an essential mechanism in the inhibition of physiological sexual arousal. Wolpe (1958, 1982) maintained that anxiety reciprocally disrupts the parasympathetic response mechanisms that generate sexual arousal. However, the relationship between anxiety and sexual functioning has been studied primarily by manipulating an individual's state-anxiety in an experimental context. Consequently, there is less information available on the association between sexual functioning and trait-anxiety, as is found in individuals with anxiety disorders.

*Prevalence of Sexual Dysfunction in Anxiety Disorder Patients*

Although the research is rather limited, a review of current literature suggests that sexual dysfunction may be associated with anxiety disorders. Ware et al. (1996) found that patients with social phobia, panic disorder, or GAD had a significantly greater risk of experiencing sexual dysfunction than those without an anxiety disorder, and that patients with panic disorder reported a lower level of sexual desire.

Multiple studies have examined the prevalence of sexual dysfunction in patients with panic disorder. Kaplan (1987) examined patients who phobically avoided sexual activity or experienced sexual aversion, and found a high incidence of panic disorder (25%) or panic disorder symptoms. A significantly lower incidence of panic disorder was found among patients who reported a loss of sexual interest or exhibited sexual avoidance. Similarly, van Minnen and Kampman (2000) found that women with panic disorder reported lower levels of sexual desire and a lesser frequency of sexual contact than women in the normal population. It was found that 44.4% the panic disorder patients experienced one or more sexual dysfunctions, while only 17.6% of the normal control group experienced sexual dysfunctions.

Specifically, patients with panic disorder reported significantly higher rates of hypoactive sexual desire disorder and sexual aversion disorder.

Since many panic disorder patients develop agoraphobia, studies have also examined the association between agoraphobia and sexual dysfunction. Buglass, Clarke, Henderson, Kreitman, and Presley (1977) found that agoraphobic women reported more loss of libido during their disorder even though premorbid sexual adjustment was equal to that of normal women.

In comparison with panic disorder, less is known about the association between OCD and sexual dysfunction. However, Rasmussen and Tsuang (1986) found that 30% of individuals with OCD reported a loss of libido since the onset of their disorder. Although Freund and Steketee (1989) found that OCD symptomatology interfered with sexual satisfaction, they also found that sexual dysfunction was relatively rare among OCD patients. In contrast, van Minnen and Kampman (2000) found that females with OCD reported less frequent sexual contact and lower sexual desire than individuals without OCD. In comparison with 17.6% of the controls, 76.4% of OCD patients reported one or more sexual dysfunctions. Further, OCD patients reported sexual desire disorder and sexual aversion disorder significantly more often than the controls. A more recent study found that women with OCD reported low levels of sexual pleasure, high sexual disgust, and impaired overall sexual functioning (Vulink, Denys, Bus & Westenberg, 2006).

A limited number of studies have examined the relationship between social phobia and sexual dysfunction. In a study of males with sexual dysfunction, premature ejaculation was found to be highly associated with social phobia, with an odds ratio of 2.55 (Coretti, Pierucci, De Scisciolo, & Nista, 2006). The findings of this study were commensurate with

previous research conducted by Figueira, Possidente, Marques, and Hayes (2001), in which premature ejaculation was found to be the most common sexual dysfunction among males with social phobia. In this study, it was also found that social phobia generally preceded the onset of premature ejaculation. Additionally, Bodinger et al. (2002) compared the sexual dysfunctions of males and females with social phobia to a normal control group. Men with social phobia reported a diminished desire during sex, a lower frequency of orgasms, and an increased incidence of retarded ejaculation. Females with social phobia reported less desire for sex, greater difficulty becoming aroused, more pain during intercourse, and diminished desire during sex.

Several studies have compared the degree of sexual dysfunction across different anxiety disorders. Aksaray, Yelken, Kaptanoğlu, Oflu, and Özaltin (2001) found that women with OCD were more sexually avoidant and nonsensual than women with GAD. Females with OCD were also found to report a higher incidence of aorgasmia than females with GAD. Patients with OCD have also been shown to suffer from a greater degree of sexual dysfunction and be less satisfied with their sex lives than patients with panic disorder (van Minnen & Kampman, 2000). Solyom, Ledwigde, and Solyom (1986) found that individuals with agoraphobia reported more sexual problems than did individuals with social phobias. In addition, Figueira et al. (2001) found that male and female patients with panic disorder were significantly more likely to possess a sexual disorder than patients with social phobia. In particular, sexual aversion disorder was significantly more common in panic disorder patients than in those with social phobia.

Very few studies have examined the relationship between GAD and sexual dysfunction. However, Angst (1998) found that GAD was associated with a reduced interest

in sex. Despite this relationship, this study did not find that other anxiety disorders (e.g. panic disorder, agoraphobia, social phobia) were associated with decreased libido.

A number of studies have attempted to examine anxiety disorder patients' levels of sexual satisfaction and perceptions of sexual dysfunction symptoms. Studies have found that the majority of obsessive-compulsive individuals report that they are sexually dissatisfied with their partners. For example, Freund and Steketee (1989) found an elevated incidence of sexual dissatisfaction among OCD patients. Similarly, Staebler, Pollard, and Merkel (1993) found that 59% of OCD patients were sexually dissatisfied. In a study by van Minnen and Kampman (2000), it was found that 57% of the females with OCD and 24% of the females with panic disorder reported that their anxiety symptoms negatively affected their sexual functioning, while none reported positive effects. In this study, sexual satisfaction was found to be negatively correlated to anxiety. Both women with OCD and their husbands reported lower levels of sexual satisfaction than controls. Further, it was found that, while less sexual satisfaction was associated with general psychopathology, including depression, anxiety, and somatization, sexual desire problems were found to be specifically related to anxiety disorders. Based on these findings, it was proposed that, in females with anxiety disorders, sexual dysfunctions are most likely to affect the desire stage of the sexual response cycle, while later stages such as excitement and orgasm appear to be unaffected (van Minnen & Kampman, 2000).

Thus, overall, the relationship between anxiety disorders and sexual dysfunction appears to be well established in the literature. However, although this relationship has been found in a number of studies, the relationship appears to be highly variable. It appears to vary according to both specific anxiety disorder and type of sexual dysfunction. It also appears

that male and female sexual functioning may be differently affected by anxiety disorders. Further, there appear to be great differences between the various anxiety disorders in the amount of research that has been devoted to examining patients' sexual functioning.

*Hypothesized Etiology of Sexual Dysfunction in Anxiety Disorders*

The relationship between anxiety disorders and sexual dysfunction is highly complex. Cognitive, affective, and physiological factors, as well as disorder-specific symptomatology, have all been hypothesized to play a role in the development of sexual dysfunction in anxiety disorder patients. Numerous authors have also recognized the possibility that psychoactive medications commonly used in the treatment of anxiety disorders may contribute to increased incidence of sexual dysfunction among individuals with anxiety disorders. However, a recent study found that, in female OCD patients, medication was not a confounding factor in the subjective appreciation of sexuality or sexual functioning (Vulink, Denys, Bus, Herman, & Westenberg, 2006).

Individuals with panic disorder frequently experience an acute "fear of fear" after initial panic attacks (Barlow, 1988; Goldstein & Chambless, 1978). This "fear of fear" refers to an apprehension about certain bodily sensations associated with panic attacks, such as increased heart rate, dizziness, and shortness of breath. This fear is thought to be associated in part with interoceptive conditioning, or a conditioned fear of internal cues (e.g. increased heart rate). Through the experience, internal cues become associated with the distressing occurrence of panic attacks. Thus, these cues are feared because they are tied to intense fear, pain, or distress (Razran, 1961). This is a classically conditioned fear in that physiological arousal becomes a conditioned stimulus associated with the intense fear and distress that individuals experience during a panic attack.

Interoceptive conditioning is useful in explaining the relationship between sexual dysfunction and panic disorder. As previously discussed, sexual activity and panic attacks are both associated with similar physiological arousal (e.g. increased heart rate and breathing rate). Thus, when individuals experience these physiological changes associated with the excitement phase of sexual arousal, they may also experience the fear and distress that have become associated with heightened physiological response. As a result, individuals may escape from sexual activity or situations producing sexual arousal to reduce the fear and distress experienced. These escape behaviors become negatively reinforced. This process leads to avoidance in that, by avoiding sexual activity or situations leading to sexual arousal, individuals are able to avoid the negative emotions associated with physiological arousal that in the past led to escape behaviors. This hypothesis is consistent with the findings that sexual aversion disorder is most commonly reported by patients with panic disorder (e.g. Figueira et al., 2001).

Another widely accepted theory regarding the association between panic disorder and sexual dysfunction focuses on individuals' misinterpretation of physiological symptoms (Clark, 1986). In particular, any type of physiological arousal similar to that experienced during a panic attack is likely be perceived as being negative and threatening. Thus, because panic and sexual arousal are characterized by many of the same sensations (Datillio, 1992), indicators of autonomic arousal elicited by sexual arousal may be misinterpreted as a threat and may lead to panic attacks.

Mowrer's (1939) two-stage theory for the development and maintenance of fear and avoidance behavior has commonly been used to explain OCD. This theory proposes that a neutral event comes to elicit fear or distress if it is paired with stimulus that naturally evokes

distress or anxiety. Through this classical conditioning process, objects, thoughts, and images can all acquire the ability to provoke fear and distress. During the second stage of this process, escape and avoidance responses are adopted in an effort to reduce the anxiety or discomfort evoked by the conditioned stimuli. When these responses are successful in reducing distress and fear, they are negatively reinforced and thus maintained.

This two-stage conceptualization of OCD is particularly useful in explaining the relationship between sexual dysfunction and OCD. Certain obsessional themes may be associated with a greater incidence of sexual dysfunction. For example, obsessions that feature sexual content may interfere with sexual functioning. Freund and Steketee (1989) found that 36% of OCD patients in their study reported sexual obsessions. Similarly, in a study by Rasmussen and Tsuang (1986), 32% of OCD patients were found to exhibit sexual impulses that conflicted with their values. Based on the two-stage theory, in individuals with sex-related obsessions, sexual thoughts or images may be conditioned to evoke fear or discomfort. Thus, in an effort to avoid encountering these sexual stimuli, individuals may avoid engaging in sexual activities. This avoidance of sexual activity then becomes negatively reinforced and maintained when it is successful in preventing the experience of fear and anxiety.

Contamination or bodily secretion obsessions may be also associated with greater sexual dysfunction than other types of obsessions. The two-stage theory is also useful in explaining why individuals with contamination fears repeatedly avoid sexual contact. Because any situation that may increase one's risk of contamination may evoke fear and distress, patients are likely to become highly avoidant of sexual activities involving physical contact or the exchange of bodily fluids. By avoiding these situations that pose a high risk of

contamination, patients are able to avoid experiencing fear and distress, and thus these avoidance behaviors are negatively reinforced and maintained. In support of this hypothesis, Salzman (1982) stated that patients with OCD may avoid sexual contact in an effort to prevent contamination.

The compulsive rituals an individual engages in may produce aversive consequences during sexual activity. For example, they may be disruptive, elicit rejection from others, or decrease one's ability to become aroused. These consequences may be so aversive that the individual avoids any sexual relations. This avoidance is negatively reinforcing in that it prevents or reduces the anxiety or distress that these consequences produce.

According to Heimberg and Barlow (1988), sexual dysfunction, especially erectile dysfunction, is a result of performance anxiety or fear of scrutiny by others, similar to social phobia. They found that healthy men exposed to both erotic stimuli and anxiety-provoking stimuli showed greater arousal than healthy men exposed to only erotic stimuli. However, among males with sexual dysfunction, this finding was reversed in that the anxiety-provoking stimuli condition produced decreased arousal in males. Thus, based on these observations, the authors hypothesized that males with sexual dysfunction may have a similar cognitive model as social phobia patients. Additionally, the high rate of central nervous system hypodopaminergism found in social phobia patients (Stein, 1998) may play a role in sexual dysfunction among this group, since dopamine is involved in sexual functioning (Schiavi & Segraves, 1995).

*Sexual Dysfunction and Quality of Life*

Several studies have explored the impact of sexual dysfunction on quality of life and life satisfaction. Bell and Bell (1972) and Masters and Johnson (1970) found that life

satisfaction and well-being were both associated with sexual satisfaction. In a more recent study, McCabe (1997) found that, although sexual dysfunction had a negative impact on quality of life in both sexes, quality of life was more strongly correlated with sexual dysfunction in women than it was in men. Women with sexual dysfunction experienced lower mean scores than women without sexual dysfunction on objective, satisfaction, and importance measures of all quality of life domains, including material well-being, health, productivity, intimacy, safety, place in community, and emotional well-being. In contrast, men with sexual dysfunction experienced poorer objective levels of quality of life in only the health and intimacy domains. In addition, it was found that men with premature ejaculation and erectile problems possessed greater deficits in quality of life than men with a lack of sexual desire. However, although research appears to indicate that sexual dysfunction negatively affects quality of life in both males and females, its effect on quality of life in anxiety disorder patients has not yet been examined.

*Anxiety Sensitivity in Individuals with Anxiety Disorders*

Anxiety sensitivity is defined as a persistent fear of anxiety and anxiety-related sensations on the basis of the belief that these sensations can have detrimental consequences (Reiss & McNally, 1985; Taylor, 1999). Thus, individuals with high anxiety sensitivity have a greater likelihood of misinterpreting or catastrophizing anxiety-related sensations. Anxiety sensitivity has been shown to play a role in the development and maintenance of a number of anxiety-related disorders, including panic disorder (McNally, 2002; Cox, Borger, & Enns, 1999) and social phobia (e.g., Rapee & Heimberg, 1997). Further, while GAD and OCD patients have been shown to have higher levels of anxiety sensitivity than individuals without an anxiety disorder (Zinbarg, Barlow, & Brown., 1997), elevations in anxiety sensitivity

appear to be less pronounced in GAD and OCD than in other anxiety disorders (Zinbarg et al., 1997; Deacon & Abramowitz, 2006).

The effect of anxiety sensitivity on sexual functioning has not yet been researched. However, it is hypothesized that, because sexual activity can produce somatic sensations similar to those feared by individuals with high anxiety sensitivity, it will be avoided. In support of this hypothesis, McWilliams and Asmundson (2001) found that exercise frequency and anxiety sensitivity were negatively correlated. These authors also hypothesized that because exercise increases physiological arousal, it will be avoided by individuals with high anxiety sensitivity. Conversely, they also hypothesized that low frequency of exercise may lead to increased anxiety sensitivity because exposure to anxiety-related arousal is limited.

*Depression and Sexual Dysfunction*

Anxiety disorders frequently occur comorbidly with depression. One study found that almost half (47.2%) of those meeting lifetime criteria for major depression also met the diagnostic criteria for a comorbid anxiety disorder (Regier, Rae, Narrow, Kaelber, & Schatzberg, 1998). Similarly, Fava et al. (2000) found that 50.6% of individuals with major depressive disorder (MDD) also had a comorbid diagnosis of an anxiety disorder. These diagnoses included social phobia (27.0%), simple phobia (16.9%), panic disorder (14.5%), GAD (10.6%), OCD (6.3%), and agoraphobia (5.5%).

A number of studies have shown that a higher prevalence of sexual dysfunction is found in patients with untreated major depressive disorder (MDD) than in nondepressed patients or a community sample (e.g. Casper et al., 1985; Mathew & Weinman, 1982; Angst, 1998). As reported by Williams and Reynolds (2006), research that has been conducted to

date indicates that the most common problem among both males and females with MDD is reduced libido.

In a recent study, Mercan et al. (2006) found that panic disorder patients with comorbid depression had greater rates of sexual aversion and lower sexual desire. When compared to individuals without a psychiatric disorder, orgasmic problems were also found to be more prevalent in panic patients with and without depression.

*Present Study: Impact of Sexual Dysfunction on Quality of Life in Anxiety Disorder Patients*

Despite research findings demonstrating the high incidence of sexual dysfunction among anxiety disorder patients and the significant effect of sexual dysfunction in quality of life, the specific impact of sexual dysfunction on quality of life in anxiety disorder patients had never been directly examined prior to the present project. Studying the way in which sexual dysfunctions influence patients' quality of life can have important implications for the assessment and treatment of anxiety disorders. According to Kazdin (1993, 1994, 2003), because quality of life is a highly salient and fundamental element of an individual's daily functioning and experience, it is considered to be the most important variable in demonstrating clinically significant change as a result of treatment. By determining which areas of functioning have the greatest influence on the quality of life of anxiety disorder patients, we will be able to design more effective treatments for this population.

## Research Questions and Hypotheses

### *Research Questions*

The purpose of this study was to collect preliminary data on the relationship between sexual functioning and quality of life in anxiety disorder patients. The first aim of the present study was to determine the effect sexual dysfunction has on quality of life in male and female anxiety disorder patients. The second aim of this study was to explore the relationship between overall quality of life and anxiety severity, anxiety sensitivity, and sexual dysfunction. Specifically, we sought to identify the role of these three variables in predicting anxiety disorder patients' quality of life. The third aim of this study was to determine whether the degree of sexual dysfunction one experiences is related to the severity of anxiety. The present study also further explored the hypothesis that sexual activity may be avoided by anxiety disorder patients due to fear of the physiological arousal sexual activity can induce. Thus, the fourth aim of the study was to explore the role anxiety sensitivity plays in the relationship between sexual dysfunction and anxiety disorders. Additionally, because of the increased prevalence of sexual dysfunction among depressed patients and the high rates of comorbidity between anxiety and depression, a fifth aim of this study was to determine whether sexual dysfunction in anxiety disorder patients varies as a function of depression.

### *Hypotheses*

1. Among anxiety disorder patients, greater sexual dysfunction will be correlated with lower quality of life, and individuals with sexual dysfunction will have a significantly lower quality of life than those without sexual dysfunction.
2. Greater sexual dysfunction will significantly predict lower overall quality of life independent of both anxiety severity and anxiety sensitivity.

3. Greater sexual dysfunction will be associated with more severe anxiety as well as greater anxiety sensitivity.
4. Degree of sexual dysfunction will be positively correlated with depressive symptoms in anxiety disorder patients.

## Method

### *Participants*

New patients between the ages of 18 and 65 presenting for treatment at the University of Michigan Hospital Anxiety Disorders Clinic were considered for participation. Those patients meeting the Diagnostic and Statistical Manual – Fourth Edition (DSM-IV-TR; American Psychiatric Association [APA], 1994) criteria of social phobia, panic disorder with and without agoraphobia, GAD, and/or OCD were eligible for the study. Further, one of these four types of anxiety disorders must have been the patient's primary diagnosis. Individuals with a diagnosis of a psychotic disorder or current substance abuse were excluded from the study.

While 146 patients were approached for participation in this study, data were collected from only 70 participants. Sixty-nine patients did not consent to participate, while 7 patients consented to participate but did not return after their appointment to complete the questionnaires. Of the 70 participants data were collected from, 4 were excluded from the study because an anxiety disorder was not a primary diagnosis, 1 participant was excluded because of a diagnosis of a psychotic disorder, and 1 participant was excluded because of having a comorbid substance abuse diagnosis. Thus, only data for the 64 participants eligible for the study was used.

The eligible sample was composed of 38 women (59.4%) and 26 men (40.6%). Their ages ranged from 18 to 63, with a mean of 32.3 years**.** Other demographic information about participants can be seen in Table 1. The most common anxiety disorder diagnosis was GAD (46.9%), followed by OCD (14.1%), social phobia (14.1%), panic disorder with agoraphobia (12.5%), and panic disorder without agoraphobia (12.5%). Twenty participants (31.3%) had a

comorbid anxiety disorder diagnosis. For frequencies of the various primary and comorbid anxiety disorders, see Table 2. Twenty participants (31.3%) also had a comorbid diagnosis of major depressive disorder. Further, 42.2% of participants were taking a selective serotonin reuptake inhibitor (SSRI) at the time of the study.

*Measures*

*Sexual functioning.* Derogatis Interview for Sexual Functioning – Self Report (DISF-SR; Derogatis, 1997) is a self-report questionnaire developed to provide a quantitative estimate of one's current (past 30 days) sexual functioning. It is gender-keyed for both males and females. It can also be used in both heterosexual and homosexual populations. The test can be scored on a discrete item level, functional domain level, and a global summary level (total score). The DISF-SR assesses five domains of sexual functioning: sexual cognition/fantasy, sexual arousal, sexual behavior/experiences, orgasm, and sexual drive/relationship (Derogatis, 1997). Each domain scale consist of 4 to 5 items each, for a total of 25 items. Each item is rated by respondents on a 4-point Likert scale, ranging from 0 (*not at all*) to 4 (*4 or more per day)* or from 0 (*not at all* or *never*) to 4 (*extremely* or *always*). Respondents' scores can be compared to the community population norm by converting total scores to standardized T-scores ($T$=50, $SD$=10; Derogatis, 1997). The DISF-SR has been found to have good reliability in community samples, with test-retest coefficients for the five scales ranging from .80 to .90 and internal consistency coefficients ranging from .74 to .80 (Derogatis, 1997).

*Quality of life.* The Quality of Life Inventory (QOLI; Frisch, 1994) was used to assess quality of life. The QOLI is 32-item self-report questionnaire that measures an individual's quality of life and satisfaction with life across 16 areas, including health, goals and values,

money, work, play, learning, creativity, helping, love, friends, family, self-esteem, children, home, neighborhood, and community. Respondents rate their level of satisfaction in each area on a 6-point scale, ranging from –3 (*very dissatisfied*) to +3 (*very satisfied*). Respondents also rate the degree of importance they place on each domain on a 3-point scale, ranging from 0 (*not important*) to 2 (*extremely important*). The satisfaction and importance scores are multiplied to create 16 weighted satisfaction scores that can be summed to generate a total quality of life score. The QOLI total score has been shown to possess good internal consistency among both clinical and nonclinical populations, with coefficients ranging from .77 to .89 (Frisch, Cornell, Villanueva, & Retzlaff, 1992). This same study also found it to have a test-retest reliability of .80 to .91. The QOLI was chosen for use in this study in part because it assesses how important the respondent considers each life domain. Thus, it aided us in gaining a better understanding of the importance anxiety patients attribute to their sexual functioning and capacity for love.

*Severity of anxiety symptoms.* The severity of anxiety symptoms was assessed using the Self-Rating Anxiety Scale (SAS; Zung, 1971). This measure is a 20-item self-report questionnaire designed to assess how often an individual experiences the symptoms of anxiety disorders. Fifteen of the items assess somatic symptoms of anxiety. Each question is rated on a 4-point Likert scale ranging from 1 (*none or a little of the time*) to 4 (*most or all of the time*). An index score is calculated by dividing the raw score by the maximal total score of 80 and then multiplying by 100. The SAS was shown to be significantly correlated with an interview-based measure of anxiety ($r$ = .74 in an anxiety disorder sample) and demonstrated adequate internal consistency (Zung, 1971). Further, the SAS was found to have a test-retest

reliability of .81 to .84 for a period ranging from 1 to 16 weeks (Michelson & Mavissakalian, 1983).

*Severity of stress symptoms.* The Depression Anxiety Stress Scales-21 item (DASS-21; Lovibond & Lovibond, 1995) was also used as a general measure of participants' depression, anxiety, and stress levels. This measure has been shown to have very good convergent and discriminant validity (Crawford & Henry, 2003). The short-form of the DASS was utilized in this study and has been show to have comparable validity to the original 42-item form (Henry & Crawford, 2005). The 21-item version has also been shown to good internal consistency with alpha coefficients of .88, .82, .90, and .93 for the Depression, Anxiety, Stress, and Total scales, respectively (Henry & Crawford, 2005). The DASS requires participants to rate the severity and frequency of specific depression, anxiety, and stress symptoms on a 4-point Likert scale ranging from 0 (*did not apply to me at all)* to 3 (*applied to me very much, or most of the time*). The items make up three scales that reflect symptom severity for the three domains.

*Anxiety sensitivity*. Anxiety sensitivity was assessed with the Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gersky, & McNally, 1986). The ASI is a 16-item self-report scale designed to measure fear of anxiety-related signs and symptoms. Respondents indicate their endorsement of each item on a 5-point Likert scale ranging from 0 (*very little*) to 4 (*very much*). Subscales of this measure were determined using principle component analysis and include Physical Concerns (4, 3, 14, 6, 10, 13, and 7), Psychological Concerns (15, 9, 2, 12, 11, and 16), and Social Concerns (1, 2, 3, 4, 5). According to Reiss et al. (1986), the reliability coefficients of the subscales are .80, .75, and .54, respectively. The reliability of the total score was found to be .85.

*Depressive symptoms.* The Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) was used to assess depressive symptoms. The PHQ-9 consists of 9 items, each representing the DSM-IV-TR (APA, 2004) symptoms of depression. The measure assesses the frequency of each symptom over the previous 2 weeks. Each item is answered on a four-point scale that ranges from 0 (*not at all*) to 3 (*nearly every day*), resulting in a total score that ranges from 0 to 27. The PHQ-9 has been shown to have good reliability and validity (Lee, Schulberg, Raue, & Kroenke, 2007; Löwe et al., 2004; Löwe, Unützer, Callahan, Perkins, & Kroenke, 2004). Further, in a study conducted by Kroenke et al. (2001) in a primary care setting, the PHQ-9 demonstrated good internal consistency with an alpha of .89.

*Demographics*. A questionnaire (see Appendix A) was developed specifically for this study to obtain information regarding the following: age, race/ethnicity, marital status, sexual orientation, menopausal status, history of sexual trauma, history of sexual dysfunction, comorbid medical conditions, and use of medications. This questionnaire also required participants to indicate whether their clinician addressed sexual functioning in their intake interview. Additionally, participants rated how important they believe it is to address sexual functioning in the intake interview on 9-point Likert scale ranging from 1 (*not at all*) to 9 (*extremely*).

*Clinical diagnosis.* Patients' primary diagnoses were obtained from the experienced psychiatrists, psychologists, social workers, or psychiatric nurse practitioners conducting their intake interview. These clinicians specialize in the diagnosis and treatment of anxiety disorders. Further, the diagnoses were based on the diagnostic criteria set forth by the DSM-

IV-TR (APA, 1994) and were discussed and confirmed during treatment team meetings at the clinic.

### *Procedure*

Prior to their intake interview at the University of Michigan Hospital Anxiety Disorders Clinic, new patients met with the principal investigator. At this time, the study was briefly explained to them and they were asked whether they would be willing to participate. Those who were willing to participate signed the consent form and then met again with the principal investigator immediately following their intake appointment. At this second meeting, the participants completed the DISF-SR, QOLI, and demographics questionnaire. After completing these questionnaires, participants indicated whether they would like their clinician to have access to the information they provided on the questionnaires.

Participants' ASI, SAS, and PHQ-9 scores were then obtained form the electronic forms filed out by all new clients at the clinic. These forms were completed prior to clients' intake appointment. Further, the principal investigator collected information regarding each participant's (a) anxiety disorder diagnosis based on DSM-IV criteria, (b) medication use, (c) diagnosis of comorbid disorders, (d) other medical conditions, and (e) current substance abuse from their clinic records.

## Statistical Analyses

### *Descriptive Statistics*

Pearson product-moment correlation coefficients were calculated to determine correlations between sexual dysfunction and the following variables: quality of life, anxiety sensitivity, anxiety severity, and depressive symptoms. A correlation matrix (see Table 3) was also created to determine the intercorrelations between the following variables: degree of sexual dysfunction, overall quality of life, anxiety severity (total score on the SAS), depressive symptoms, and severity of stress symptoms (Stress scale score on the DASS), and age.

### *Inferential Statistics*

A t-test analysis was used to determine whether anxiety disorder patients with sexual dysfunction have a lower quality of life than those patients without sexual dysfunction. A multiple regression analysis was also used to determine if sexual dysfunction significantly predicts quality of life independent of level of anxiety sensitivity and anxiety severity.

For the purpose of this study, presence or absence of sexual dysfunction was determined by calculating participants' T-scores on the DISF-SR functional domain scales and total scale. Those participants with a T-score of 40 or less were considered to be sexually dysfunctional (overall or in a specific area of function), while those with a T-score of 41 or greater were considered to have normal sexual functioning. With the imposition of these guidelines, 35.9% of participants were found to be sexually dysfunctional with regards to overall sexual functioning. For frequencies of sexual dysfunction for each specific area of sexual functioning, see Table 4.

# Results

## *Effect of Sexual Dysfunction on Quality of Life*

Contrary to our hypothesis, general sexual functioning as represented by the DISF-SR Total Score was not found to be significantly correlated with overall quality of life ($r = .13$). However, overall quality of life was found to be significantly positively correlated with the Orgasm scale on the DISF-SR ($r = .250$; $p<.05$). Thus, those with a higher quality of life report greater orgasmic functioning. The correlation between quality of life and the Sexual Behavior/Experience scale was also approaching significance ($r = .245$; $p = .051$).

Calculation of participants' DISF-SR standardized T-scores allowed them to be divided into those with and those without sexual dysfunction. As described previously, those with a T-score of 40 or less were considered to be sexually dysfunctional. T-test analyses showed that overall quality of life did not significantly differ for participants classified as being sexually dysfunctional. However, participants with a T-score of 40 or less on the Orgasm scale were found to have a significantly lower overall quality of life ($t = -2.148$; $p<.05$).

Participants with a T-score of 40 or less on the Sexual/Behavior/Experiences scale were found to have a significantly lower weighted score on QOLI Love domain ($t = -2.36$; $p<.05$). This same relationship was also found for participants with a T-score of 40 or less on the Sexual Drive/Relationship score ($t = -2.183$; $p<.05$).

A multiple regression analysis was used to determine if overall sexual dysfunction significantly predicted quality of life, beyond the predictive ability of anxiety severity and sensitivity. In the prediction model of anxiety severity (SAS total score), anxiety sensitivity, and overall sexual dysfunction, degree of sexual dysfunction was not found to significantly

predict overall quality of life ($\beta$ = .124; $p$ = .33). This finding was contrary to our hypothesis that sexual functioning would be an significant independent predictor in this model. In fact, the entire model predicted only6% ($R^2$ = .060) of the variance in overall quality of life, which was not found to be significant, $F$ (3, 60) = 1.27, $p$ = .29 (see Table 5).

However, a supplemental hierarchical regression analysis was also conducted the predictive ability of a variety of variables that were found to be correlated with quality of life (see Table 6). In the first step, the predictive ability of patients' age, gender, partner status, and depressive symptomatology were explored. This model was found to be a significant predictor of quality of life $F$ (4, 59) = 11.201, $p$<.001. This step predicted 43.2% ($R^2$ = .432) of the variance in quality of life. In this model, depression symptomatology was found to be the only significant predictor of quality of life ($\beta$ = -.574; $p$<.001).

In the second step of this regression analysis, patients' orgasmic functioning scores and sexual experiences score were added to this model. These sexual functioning scores were selected because they were found to have the strongest correlation with quality of life. This model was also found to be a significant predictor of quality of life $F$ (4, 59) = 12.113, $p$<.001. This step predicted 56.0% ($R^2$ = .560) of the variance in quality of life. In this model, depression symptomatology was again found to be the greatest predictor of quality of life ($\beta$ = -.552; $p$<.001). However, sexual experiences and behaviors were also found to be a significant predictor of quality of life ($\beta$ = .298; $p$<.01), as was gender ($\beta$ = .226; $p$<.05).

*Relationship between Sexual Dysfunction and Anxiety Symptom Severity*

Our hypothesis that greater anxiety severity would predict lower sexual functioning was not supported. Sexual functioning was not found to be significantly correlated to anxiety severity as measured by the DASS-21 Anxiety subscale or SAS Total Score. A t-test analysis

similarly found that participants with sexual dysfunction (DISF-SR Total T-score of 40 or less) did not demonstrate significant differences in anxiety severity. This was true for both the DASS-21 Anxiety subscale and SAS Total Score. However, participants with a T-score of 40 or less on the DISF-SR Sexual Drive/Relationship Score demonstrated significantly higher scores on the DASS Stress scale ($t = 2.06$; $p<.05$).

DISF-SR Sexual Cognition/Fantasy Scores were found to be the only sexual functioning score to be significantly negatively correlated with anxiety sensitivity ($r = -.281$; $p<.05$). Thus, individuals with greater anxiety sensitivity reported less sexual fantasy. This finding partially supported our hypothesis that greater anxiety sensitivity would be associated with lower sexual functioning.

*Effect of Depressive Symptoms on Sexual Functioning*

Contrary to our hypothesis, sexual functioning was not found to be significantly correlated to depressive symptomatology as measured by the DASS-21 Depression subscale or PHQ-9 Total Score. A t-test analysis similarly found that participants with sexual dysfunction (DISF-SR Total T-score of 40 or less) did not demonstrate significant differences in depressive symptomatology.

Those participants who reported taking an SSRI antidepressant were not found to differ significantly in their sexual functioning from those not taking an SSRI antidepressant. Those with a current comorbid diagnosis of major depressive disorder were found to have a significantly lower overall quality of life ($t = 3.27$; $p<.01$). Surprisingly, those with a comorbid diagnosis of major depressive disorder were found to have significantly higher Sexual Cognition/Fantasy scores ($t = -2.10$; $p<.05$). Also, as a validity check of clinicians'

diagnoses, those with a comorbid diagnosis of major depressive disorder also had a significantly higher score on the PHQ-9 ($t$ = -4.04; $p$<.001).

*Supplemental Analyses*

Sexual functioning and quality of life was found to significantly differ based on participants' partner status. Participants who were married, dating, or living with a significant other were found to have greater overall sexual functioning ($t$ = -2.27; $p$<.05), greater Sexual Behavior/Experiences scores ($t$ = -3.53; $p$<.01), greater orgasmic function ($t$= -3.43; $p$<.01), and greater Sexual Drive/Relationship scores ($t$ = -2.69; $p$<05). Those with a partner also had a greater overall quality of life ($t$ = -2.55; $p$<05).

Participants who had experienced a sexual trauma did not significantly differ in sexual functioning from those that had not reported experiencing a sexual trauma. However, participants who had experienced a sexual trauma reported more severe anxiety as measured by the SAS ($t$ = -2.71; $p$<.01) and greater depressive symptoms as measured by the PHQ-9 ($t$ = -2.95; $p$<.01).

Participants with at least one comorbid anxiety diagnosis were found to have significantly lower Sexual Behavior/Experience scores ($t$ = 2.20; $p$<.05) and lower Sexual Drive/Relationship scores ($t$ = 2.12; $p$<.05). Differences in overall sexual functioning was also approaching significance ($t$ = 1.93; $p$=.058), with those with at least one comorbid anxiety disorder having lower overall sexual functioning. Participants with at least one comorbid anxiety diagnosis were also found to have significantly greater stress ($t$ = -4.44; $p$<.001), more severe anxiety ($t$ = -4.90; $p$<.001), and greater depressive symptoms ($t$=-2.75; $p$<.01).

Participants with greater sexual functioning placed significantly more importance on clinicians asking about sexual functioning. Participants with a T-score of 40 or less on DISF Total Scale had a mean importance rating of 3.36 versus a mean rating of 4.73 for participants with a DISF Total Scale T-score greater than 40 ($t$ = -2.18; $p$<.05). A similar relationship was found for participants with a T-score less than 40 on both the Sexual Cognition/ Fantasy score ($t$ = -2.35; $p$<.05) and the Sexual Behavior/Experience scale ($t$ = -2.43; $p$<.05).

Participants with T-score of 40 or less on the DISF Total Scale were found to be significantly older than participants with a T-score greater than 40 ($t$ = 2.73; $p$<.01). Specifically, those with a T-score of 40 or less had a mean age of 37.2 years compared to a mean age of 29.6 years for those with a T-score greater than 40 on overall sexual functioning. A similar relationship was found for participants with a T-score less than 40 on both the Sexual Arousal scale ($t$ = -2.85; $p$<.01) and the Sexual Behavior/Experience scale ($t$ = -2.07; $p$<.05).

Significant gender differences were found for sexual functioning and quality of life. Males were found to have significantly higher scores on the Sexual Cognition/Fantasy scale ($t$ = 3.97; $p$<.001), Sexual Arousal scale ($t$ = 2.12; $p$<.05), and Sexual Drive/Relationship scale ($t$ = 2.98; $p$<.01). Males also reported significantly higher DISF Total scale scores ($t$ = 3.33; $p$<.01). Despite reporting greater sexual functioning, males were found to report significantly lower overall quality of life ($t$ = -2.47; $p$<.05).

Those participants reporting cardiovascular disease and/or diabetes were not found to differ significantly in sexual functioning than those not reporting cardiovascular problems or diabetes. No significant differences in sexual functioning were found based on menopausal

status. However, only 2 participants reported that they were currently going through menopause and only 2 reported that they had completed menopause.

## Discussion

The primary purpose of this study was to determine the impact of sexual dysfunction on quality of life. The results suggest that overall sexual functioning is not significantly related to quality of life. However, quality of life was found to be significantly related to participants' orgasmic functioning. Specifically, the greater one's orgasmic capacity, the greater their quality of life. The relationship between quality of life and one's reported sexual behaviors was also approaching significance. Thus, those participants engaging in sexual activities more often may have greater quality of life.

Despite the fact that the correlation between sexual experiences and behaviors was only approaching significance, sexual behaviors was found to be a significant predictor of quality of life. Thus, it appears that how often one engages in sexual activities may be a particularly area of functioning to address in order to directly impact one's quality of life.

Participants who were classified as being sexually dysfunctional in both the domains of sexual/relationship satisfaction and sexual behaviors also reported significantly lower contentment in the area of love. This relationship is not surprising with regards to sexual relationship and satisfaction questions, as those who are not in a love relationship or are not satisfied with their love relationship, but highly value one, would be thought to have a lower weighted satisfaction score in this domain.

The hypothesis that those with more severe anxiety would demonstrate lower sexual functioning was not supported by the findings of this study. No measures of anxiety were found to be significant with any area of sexual functioning. However, one's sexual drive and relationship functioning was found to be correlated with one's stress level. Thus, the more stress one experiences, the less satisfaction one reports with his or her sexual relationship and

overall functioning. Because it is a correlation, the directionality of this relationship is unclear. Thus, stress may cause problems for one's sexual satisfaction, or impairments in one's sexual satisfaction may lead to higher levels of stress.

The hypothesis that those with greater anxiety sensitivity would have lesser overall sexual functioning was not completely supported by the results. However, those greater in anxiety sensitivity did report less sexual fantasy. One hypothesized reason for this finding may be that these individuals' constant hypervigilance and rumination about physiological sensations may distract so much that they rarely attend to sexual stimuli or do not allow themselves to engage in sexual fantasy.

Surprisingly, general sexual functioning was not found to be significantly correlated to depressive symptomatology, and those participants who reported taking an SSRI antidepressant were not found to differ significantly in their sexual functioning from those not taking an SSRI antidepressant. These results run counter to the aforementioned hypotheses and conflict with numerous speculations about the cause of sexual dysfunction among anxiety disorder patients. However, the finding is commensurate with the earlier finding by Vulink et al. (2006) that, among female OCD patients, medication was not a confounding factor in sexual functioning. Thus, the reason for these findings is somewhat unclear, but the present research suggests that the relationship between sexual functioning and depression and SSRI use may be different among anxiety disorder patients. To further explore this possibility, future research in this area is called for.

It was also surprising that individuals with greater depressive symtomatology were found to engage in more sexual fantasy. The reason for this finding is unclear, as it runs counter to what would be expected and is not in line with previous findings (e.g., Casper et

al., 1985; Mathew & Weinman, 1982; Angst, 1998) that sexual drive is lowered in individuals with depression. Because of the direct conflict with significant previous research, this finding is suspected to be an artifact of our small sample. However, it is also possible that this finding may reflect an important distinction between actual sexual behaviors/libido and sexual fantasy life among depressed individuals. Despite the unexpected findings regarding the effect of depressive symptomatology on sexual dysfunction, depression does seem to be an important factor in the prediction of quality of life in anxiety disorder patients.

Having more than one anxiety diagnosis seems to be important in determining sexual functioning. Those with comorbid anxiety disorders were found to participate in less sexual activity and experience less sexual satisfaction. Although not statistically significant, participants with comorbid anxiety disorders also demonstrated a trend of lower overall sexual functioning. These participants also had more severe symptoms of anxiety, stress, and depression.

Having a romantic partner also seems to be an important factor in the sexual functioning and quality of life of anxiety disorder patients. Sexual functioning was greater in those participants who were either dating or married, and these participants also had a greater quality of life. This is not surprising, as individuals with a partner are likely to have greater relationship satisfaction scores. These individuals are also more likely to engage in partnered sexual activities, which may have resulted in greater DISF-SR scores. Although the sexual functioning measure used in this study did assess individual sexual behaviors (e.g., masturbation, sexual fantasy), many of the questions on the measure were more focused on partnered sexual behaviors. Thus, it may be important for future studies to assess unpartnered anxiety patients using a sexual functioning measure more sensitive to individual sexual

behaviors in order to determine whether having a romantic partner actually helps to preserve sexual functioning. Future studies should also assess social support, as partnered individuals may have greater social support, which may in turn affect sexual functioning.

Patients' age also seems to be important in sexual functioning. Those with less sexual functioning had greater mean age. However, the cause of this age difference is unclear, especially because the age discrepancy was not that great (37.17 vs. 29.56). Further, those participants reporting cardiovascular disease and/or diabetes were not found to differ significantly in sexual functioning than those not reporting cardiovascular problems or diabetes. No significant differences in sexual functioning were found based on menopausal status. However, very few participants reported any experience of menopause.

Significant gender differences were found for sexual functioning and quality of life. Males were found to have significantly greater overall sexual functioning, as well as greater functioning in the areas of sexual fantasy, arousal, and libido/relationship satisfaction. However, despite these findings of greater sexual functioning, males surprisingly reported significantly lower overall quality of life. A number of possible reasons may be behind this unexpected finding. For example, a sampling error could have occurred in that the female participants may have had greater baseline levels of quality of life (prior to anxiety disorder-related morbidity). It may also be possible that male's sexual functioning level has a lesser effect on quality of life than female's sexual functioning. This explanation is supported by McCabe's (1997) earlier finding that quality of life was less strongly correlated with sexual dysfunction in men than it was in women.

In total, these findings suggest that certain areas of sexual functioning may be impacted more heavily by anxiety disorder symptomatology and may in turn have a greater

negative impact on quality of life. However, it is important to consider these findings in light of the limitations of this study, particularly related to large number of correlational findings and lack of causal relationships found in the study. While several correlational relationships were found, it is unclear what the cause of these relationships is. For example, sexual dysfunction could be causing lower quality of life, or a third variable not assessed could be causing this relationship.

Another limitation of this study may have been the low rate of sexual dysfunction found. Only 36% of the sample were found to be sexually dysfunctional. Further, only 33% of the sample had a comorbid anxiety diagnosis and only 31% of the sample had a comorbid depression diagnosis. These low base rates may have impaired the study's ability to detect any significant relationships between overall sexual dysfunction, psychological symptom severity, and quality of life.

Despite its limitations, this study has a number of potential implications for the assessment and treatment of anxiety disorder patients. With regards to assessment, it was found that participants with greater sexual functioning placed significantly more importance on clinicians asking about sexual functioning. While this finding was unexpected, it may be that patients with lower sexual functioning are downplaying the importance of sexual functioning assessment in a self-preservative effort to lessen the distress they experience over their sexual impairments. It is also possible that these individuals are embarrassed about their sexual impairments and do not want to discuss them with their clinician. Despite this finding, it is not possible to identify and treat patients with sexual impairments without assessing all patients for sexual dysfunction.

The finding that specific areas of impaired sexual functioning may be related to lower quality of life supports the importance of assessing and treating sexual dysfunction in this patient population. It may be particularly important to assess orgasmic functioning, regularity of sexual behavior, and relationship satisfaction, as these factors seem to be most influential in quality of life. Assessing those patients without a sexual partner for sexual dysfunction also appears to be particularly important, as these patients appear to be at greater risk for both sexual dysfunction and lower quality of life.

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Table 1

*Demographic Features*

| Demographic Category | *N* (%) |
|---|---|
| Race | |
| Caucasian | 56 (87.5%) |
| Hispanic | 3 (4.7%) |
| African American | 1 (1.6%) |
| Other | 4 (6.4%) |
| Marital Status | |
| Married | 29 (45.3%) |
| Single with partner | 14 (21.9%) |
| Single without partner | 10 (15.6%) |
| Single living with opposite sex partner | 5 (7.8%) |
| Divorced | 4 (6.3%) |
| Single living with same sex partner | 1 (1.6%) |
| Separated | 1 (1.6%) |
| Sexual Orientation | |
| Heterosexual | 57 (89.1%) |
| Bisexual | 3 (4.7%) |
| Gay/Lesbian | 2 (3.2%) |
| Unsure | 2 (3.1%) |

Table 2

*Anxiety Disorder Diagnoses*

| Diagnosis | *N* (%) |
|---|---|
| Primary Anxiety Disorder | |
| GAD | 30 (46.9%) |
| OCD | 9 (14.1%) |
| Social Phobia | 9 (14.1%) |
| Panic Disorder with Agoraphobia | 8 (12.5%) |
| Panic Disorder without Agoraphobia | 8 (12.5%) |
| Comorbid Anxiety Diagnosis | |
| No Diagnosis | 44 (68.8%) |
| GAD | 6 (9.4%) |
| Social Phobia | 6 (9.4%) |
| Panic Disorder without Agoraphobia | 5 (7.8%) |
| OCD | 2 (3.1%) |
| Panic Disorder with Agoraphobia | 1 (1.6%) |

Table 3

*Correlation Matrix*

| | DISF Total | QOLI Total | SAS Total | PHQ Total | DASS Stress Scale | AGE |
|---|---|---|---|---|---|---|
| **DISF Total** | -- | .130 | -.106 | .028 | -.126 | -.248* |
| **QOLI Total** | | -- | -.154 | -.615** | -.239 | .146 |
| **SAS Total** | | | -- | .625** | .561** | -.046 |
| **PHQ Total** | | | | -- | .538** | -.023 |
| **DASS Stress Scale** | | | | | -- | -.082 |
| **AGE** | | | | | | -- |

*Note*. DISF = Derogatis Interview for Sexual Functioning – Self-Report; QOLI = Quality of Life Inventory; SAS = Self-Rating Anxiety Scale; PHQ = Patient Health Questionnaire–9; DASS = Depression Anxiety Stress Scale
*p<.05; **p<.0

Table 4

*Sexual Functioning*

| Sexual Functioning Category | *N* (%) |
|---|---|
| Sexual Cognition/Fantasy | |
| Normal (T-score > 40) | 48 (75.0%) |
| Dysfunctional (T-Score < 40) | 16 (25.0%) |
| Sexual Arousal | |
| Normal (T-score > 40) | 47 (73.4%) |
| Dysfunctional (T-Score < 40) | 17 (26.6%) |
| Sexual Behavior/Experiences | |
| Normal (T-score > 40) | 39 (60.9%) |
| Dysfunctional (T-Score < 40) | 25 (39.1 %) |
| Orgasm | |
| Normal (T-score > 40) | 32 (50.0%) |
| Dysfunctional (T-Score < 40) | 32 (50.0%) |
| Sexual Drive/Relationship | |
| Normal (T-score > 40) | 38 (59.4%) |
| Dysfunctional (T-Score < 40) | 26 (40.6%) |
| Overall Sexual Functioning (DISF-SR Total Score) | |
| Normal (T-score > 40) | 41 (64.1%) |
| Dysfunctional (T-Score < 40) | 23 (35.9%) |

Table 5

*Summary of Multiple Regression Analysis for Anxiety and Sexual Functioning Variables Predicting Quality of Life*

| Variable | *B* | *SE B* | β |
|---|---|---|---|
| Anxiety Severity | -0.40 | 0.025 | -0.241 |
| Anxiety Sensitivity | 0.025 | 0.021 | 0.183 |
| Sexual Functioning | 0.007 | 0.007 | 0.124 |

*Note.* $R^2 = .060$

Table 6

*Summary of Supplemental Hierarchical Regression Analysis for Variables Predicting Quality of Life*

| Variable | *B* | *SE B* | β |
|---|---|---|---|
| Step 1 | | | |
| Age | 0.014 | 0.017 | 0.097 |
| Gender | 0.554 | 0.358 | 0.168 |
| Partner Status | 0.054 | 0.117 | 0.059 |
| Depression Severity | -0.152 | 0.027 | -0.574 |
| Step 2 | | | |
| Age | 0.028 | 0.016 | 0.193 |
| Gender | 0.879 | 0.336 | 0.266 |
| Partner Status | 0.008 | 0.105 | 0.008 |
| Depression Severity | -0.147 | 0.024 | -0.552 |
| Orgasmic Functioning | 0.039 | 0.025 | 0.152 |
| Sexual Behaviors/Experiences | 0.071 | 0.023 | 0.298 |

*Note.* $R^2$ = .657 for Step 1; $R^2$ = .749 for Step 2.

Appendix A

Demographics Questionnaire

**PLEASE COMPLETELY FILL OUT ALL QUESTIONNAIRES REGARDLESS OF WHETHER OR NOT YOU ARE IN A ROMANTIC RELATIONSHIP OR ARE CURRENTLY SEXUALLY ACTIVE.**

**Please provide the following information about yourself:**

1. What is your age? _____

2. How would you classify yourself?

___ Caucasian
___ Hispanic
___ African American
___ Asian/Pacific Islander
___ Middle Eastern
___ American Indian/Alaskan Native
___ Multiracial
___ Prefer not to say

3. What is your marital status (choose one)?

____ Single - No romantic partner
____ Single – Dating or with a romantic partner
____ Single - Living with opposite sex partner
____ Single - Living with same sex partner
____ Married
____ Divorced
____ Separated
____ Other (please indicate_____)

4. What is your sexual orientation?

____ Heterosexual/Straight

____ Gay

____ Lesbian

____ Bisexual

____ Not sure

____ Prefer not to say

5. What is your menopausal status? (females only)

____ I have not yet begun menopause

____ I am currently going through menopause

____ I have completed menopause

6. Have you ever experienced any type of sexual trauma (e.g. rape, sexual abuse)?

_____ Yes

_____ No

7. Have you ever been diagnosed with any type of sexual disorder or dysfunction?

_____ Yes (Type of disorder/dysfunction: _____)

_____ No

8. Please list any medical conditions that you have been diagnosed as having:

_____

_____

_____

_____

_____

9. Please list the following information about any medications you are currently taking:

Medication Name How much How often

_____

_____

_____

_____

_____

_____

_____

10. Did the clinician you saw today ask you about your sexual functioning (check one)?

☐ ___Yes ☐ ___No ☐ ___Unsure

***11. How important do you think it is for clinicians to address sexual functioning in anxiety disorder patients (circle one number)?***

| **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
|---|---|---|---|---|---|---|---|---|---|
| not important | not very important | | | somewhat important | | | | | extremely important |

Appendix B


Medical School Institutional Review Board (IRBMED) • Argus I Building, 517 W. William, Ann Arbor, MI 48103-4943 • phone (734) 763 4768 • fax (734) 763 9603 • irbmed@umich.edu

**To:** Dr. James Abelson

**From:**
Michael Geisser
John Weg

**Cc:**
Courtney Fons
Joseph Himle
Hedieh Briggs
Ellen Koch
James Abelson

**Subject:** Initial Study Approval for [HUM00014504]

**SUBMISSION INFORMATION:**
Study Title: Impact of sexual dysfunction on quality of life among anxiety disorder patients
Full Study Title (if applicable):
Study eResearch ID: HUM00014504
Date of this Notification from IRB: 10/29/2007
Initial IRB Approval Date: 9/18/2007
**Current IRB Approval Period: 9/18/2007 - 9/17/2008**
**Expiration Date:** 9/17/2008
UM Federalwide Assurance (FWA): FWA00004969 expiring on 5/10/2009
OHRP IRB Registration Number(s): IRB00001999

**NOTICE OF IRB APPROVAL AND CONDITIONS:**
The IRBMED has reviewed and approved the study referenced above. The IRB determined that the proposed research conforms with applicable guidelines, State and federal regulations, and the University of Michigan's Federalwide Assurance (FWA) with the Department of Health and Human Services (HHS). You must conduct this study in accordance with the description and information provided in the approved application and associated documents.

**APPROVAL PERIOD AND EXPIRATION:**
The approval period for this study is listed above. Please note the expiration date. If the approval lapses, you may not conduct work on this study until appropriate approval has been re-established, except as necessary to eliminate apparent immediate hazards to research subjects. Should the latter occur, you must notify the IRB Office as soon as possible.

**IMPORTANT REMINDERS AND ADDITIONAL INFORMATION FOR INVESTIGATORS**

**APPROVED STUDY DOCUMENTS:**
You must use any date-stamped versions of recruitment materials and informed consent documents available in the eResearch workspace (referenced above). Date-stamped materials are available in the "Currently Approved Documents" section on the "Documents" tab.

**RENEWAL/TERMINATION:**
At least two months prior to the expiration date, you should submit a continuing review application either to renew or terminate the study. Failure to allow sufficient time for IRB review may result in a lapse of approval that may also affect any funding associated with the study.

**AMENDMENTS:**
All proposed changes to the study (e.g., personnel, procedures, or documents), must be approved in advance by the IRB through the amendment process, except as necessary to eliminate apparent immediate hazards to research subjects. Should the latter occur, you must notify the IRB Office as soon as possible.

**AEs/ORIOs:**
You must inform the IRB of all unanticipated events, adverse events (AEs), and other reportable information and occurrences (ORIOs). These include but are not limited to events and/or information that may have physical, psychological, social, legal, or economic impact on the research subjects or others.

**SUBMITTING VIA eRESEARCH:**
You can access the online forms for continuing review, amendments, and AEs/ORIOs in the eResearch workspace for this approved study (referenced above).

**MORE INFORMATION:**
You can find additional information about UM's Human Research Protection Program (HRPP) in the Operations Manual and other documents available at: www.research.umich.edu/hrppp.

**Michael Geisser**
Co-chair, IRBMED

**John Weg**
Co-chair, IRBMED

Appendix C

EASTERN MICHIGAN UNIVERSITY

Education First

October 22, 2007

Courtney Fons
Department of Psychology

Dear Courtney Fons:

The Human Subjects Institutional Review Board (IRB) of Eastern Michigan University has granted approval to your proposal, "Impact of Sexual Dysfunction on Quality of Life Among Anxiety Disorder Patients."

After careful review of your completion application, the IRB determined that the rights and welfare ofthe individual subjects involved in this research are carefully guarded. Additionally, the methods used to obtain informed consent are appropriate, and the individuals p~lrtic~pating in your study are not atrisk.

You are reminded of your obligation to advise the IRB of any change in the protocol that might alter your research in any manner that differs from that upon which this approval is based. Approval of this project applies for one year from the date of this letter. If your data collection continues beyond the one-year period, you must apply for a renewal..

On behalf of the Human Subjects Committee, I wish you success in conducting your research.

Sincerely,

Deb de Laski-Smith, Ph.D.
Interim Dean
Graduate School
Administrative Co-Chair
University Human Subjects Review Committee

Note: If project continues beyond the length of **one** year, please submit a continuation request form by **10/23/08.**

Reference # 070914

University Human Subjects Review Committee' Eastern Michigan University Starkweather Hall
Ypsilanti, Michigan 48197
Phone: 734.481.0042 Fax: 734.487.0050
E.mail: human.subjectS@emich.edu
www.ord.emich.edu/

Appendix D

# UNIVERSITY OF MICHIGAN
# CONSENT TO BE PART OF A RESEARCH STUDY

## INFORMATION ABOUT THIS FORM

You may be eligible to take part in a research study. This form gives you important information about the study. It describes the purpose of the study, and the risks and possible benefits of participating in the study.

Please take time to review this information carefully. After you have finished, you should talk to the researchers about the study and ask them any questions you have. You may also wish to talk to others (for example, your friends, family, or other doctors) about your participation in this study. If you decide to take part in the study, you will be asked to sign this form. *Before you sign this form, be sure you understand what the study is about, including the risks and possible benefits to you.*

## 1. GENERAL INFORMATION ABOUT THIS STUDY AND THE RESEARCHERS

**1.1 Study title:** Impact of sexual dysfunction on quality of life among anxiety disorder patients.

**1.2 Company or agency sponsoring the study:** Blue Cross Blue Shield of Michigan Foundation

**1.3 Names, degrees, and affiliations of the researchers conducting the study:**

James Abelson, M.D., Ph.D., Department of Psychiatry, University of Michigan
Courtney Fons, B.A., B.S., Department of Psychology, Eastern Michigan University
Ellen Koch, Ph.D., Department of Psychology, Eastern Michigan University
Joseph Himle, Ph.D., Department of Psychiatry, University of Michigan
Hedieh Briggs, M.S.W., Department of Psychiatry, University of Michigan

## 2. PURPOSE OF THIS STUDY

**2.1 Study purpose:**

You are being asked to participate in a research project. The purpose of the study is to learn more about what symptoms affect anxiety disorder patients' quality of life. It is expected that symptoms related to one's sexual functioning will lower one's quality of life. This research may help determine what symptoms should be addressed in the treatment of anxiety disorder patients to better improve patients' overall quality of life.

## 3. INFORMATION ABOUT STUDY PARTICIPANTS (SUBJECTS)

Taking part in this study is completely **voluntary**. You do not have to participate if you don't want to. The standard medical care that you receive does not depend on your participation in this study. You may also leave the study at any time. If you leave the study before it is finished, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled.

### 3.1 Who can take part in this study?

Any patient presenting for an outpatient evaluation at the University of Michigan Anxiety Disorders Program Outpatient Clinic who is English speaking, between 18 and 65, and has a primary psychiatric diagnosis of panic disorder, generalized anxiety disorder, obsessive-compulsive disorder, and/or social phobia. To take part in this study, you must also have previously consented to participate in The University of Michigan Adult Ambulatory Program Database Development Project (IRB: 2000-0584), as information from your M-Strides measures will be used. However, we will not be allowing people who have ever been diagnosed with a psychotic disorder or who are currently abusing substances to participate.

### 3.2 How many people (subjects) are expected to take part in this study?

Recruitment will continue until a minimum of 100 subjects meeting the above criteria have been identified and completed the study.

## 4. INFORMATION ABOUT STUDY PROCEDURES

### 4.1 What exactly will be done to me in this study? What kinds of research procedures will I receive if I agree to take part in this study?

All subjects in this study will fill out a number of questionnaires immediately following their intake appointment at the anxiety disorders clinic. In addition, if participants desire that their information from the completed questionnaires be shared with their clinician, they will have the option of signing a release of information consent; however, sharing information with the clinician is completely voluntary.

### 4.2 How much of my time will be needed to take part in this study? When will my participation in the study be over?

The questionnaires, which will be completed in a private room, will take approximately 20 to 40 minutes total to complete. No further participation will be needed after these questionnaires are filled out.

## 5. INFORMATION ABOUT RISKS AND BENEFITS

### 5.1 What risks will I face by taking part in the study? What will the researchers do to protect me against these risks?

The known or expected risks are:

You may find questions regarding personal or sensitive topics upsetting, or answering these questions may cause you discomfort. The risk of discomfort is likely to be common, while the risk of becoming upset is predicted to be infrequent to likely. Although this experience may be distressing, we do not think that it will be harmful. You may refuse to answer any questions on the questionnaires that you wish. You can notify the investigator if you are having any problems while filling out the questionnaires.

However, as with any research study, there may be additional risks that are unknown or unexpected.

### 5.2 What happens if I get hurt, become sick, or have other problems as a result of this research?

The researchers have taken steps to minimize the known or expected risks. However, you may still experience problems or side effects, even when the researchers are careful to avoid them. If you believe that you have been harmed, notify the researchers listed in Section 10 of this form. Should you get physically injured as a result of research-related treatments or procedures, the University of Michigan will provide first aid medical treatment. Additional medical treatment will be provided, if the University determines that it is responsible to provide such treatment. If you sign this form, you do not give up your right to seek additional compensation if you are harmed as a result of being in this study.

Please note: It is important that you tell the researchers about any injuries, side effects, or other problems that you experience during this study.

### 5.4 How could I benefit if I take part in this study? How could others benefit?

You may not receive any personal benefits from being in this study. However, subjects who choose to share information from their completed questionnaires with their clinician may provide their clinician with additional information that can be used in the assessment and treatment of their disorder. Possible benefits of the research for future anxiety disorder patients include the development of more comprehensive assessment and treatment techniques, which could lead to more effective interventions for anxiety disorders.

## 6. OTHER OPTIONS

### 6.1 If I decide not to take part in this study, what other options do I have?

Your participation in this study is completely voluntary. There is no alternative to not participating, and you will not be penalized if you choose not to participate. If you have further questions, please ask the researchers about other options you may have.

## 7. ENDING THE STUDY

### 7.1 If I want to stop participating in the study, what should I do?

You are free to leave the study at any time. If you leave the study before it is finished, there will be no penalty to you, and you will not lose any benefits to which you may otherwise be entitled. If you choose to tell the researchers why you are leaving the study, your reasons for leaving may be kept as part of the study record. If you decide to leave the study before it is finished, please notify one of the persons listed in Section 10 "Contact Information" (below).

### 7.2 Could there be any harm to me if I decide to leave the study before it is finished?

No harm is expected if you choose to leave the study before it is finished.

### 7.3 Could the researchers take me out of the study even if I want to continue to participate?

Yes. There are many reasons why the researchers may need to end your participation in the study. Some examples are:

- ✓ The researcher believes that it is not in your best interest to stay in the study.
- ✓ You become ineligible to participate.
- ✓ You do not follow instructions from the researchers.
- ✓ The study is suspended or canceled.

## 8. FINANCIAL INFORMATION

### 8.2 Will I be paid or given anything for taking part in this study?

No. You will not be paid for taking part in this study.

### 8.3 Who could profit or financially benefit from the study results?

No person or organization has a financial interest in the outcome of this study.

## 9. CONFIDENTIALITY OF SUBJECT RECORDS AND AUTHORIZATION TO RELEASE YOUR PROTECTED HEALTH INFORMATION

University of Michigan policies require that private information about you be protected. This is especially true for your personal health information.

On the other hand, sometimes the law allows or requires others to see your information. The information given below describes how your privacy and the confidentiality of your research records will be protected in this study.

### 9.1 How will the researchers protect my privacy?

Your research information will be stored in a locked cabinet and will not be made a part of your regular medical record, unless you sign a release of information for your questionnaires to be shared with your clinicians. In this case, information provided on the questionnaires may become part of your regular medical record. Research records will be kept in a separate research file that does not include names, registration numbers, or other information that is likely to allow someone other than the researchers to link the information to you.

### 9.2 What information about me could be seen by the researchers or by other people? Why? Who might see it?

Signing this form gives the researchers your permission to obtain, use, and share information about you for this study, and is required in order for you to take part in the study. Information about you may be obtained from any hospital, doctor, and other health care provider involved in your care.

Information about you may include information about your health and your medical care before, during, and after the study, even if that information was not collected as part of this research study. For example:

- Hospital/doctor's office records, including test results (blood tests, urine tests, etc.)
- Mental health care records (except psychotherapy notes not kept with your medical records)
- Alcohol/substance abuse treatment records
- All records relating to your psychological condition, the treatment you have received, and your response to the treatment

There are many reasons why information about you may be used or seen by the researchers or others during this study. Examples include:

- The researchers may need the information to make sure you can take part in the study.

- University, Food and Drug Administration [FDA], and other government officials may need the information to make sure that the study is done properly.

- The researchers may need to use the information to create a databank of information about your condition or its treatment.

The results of this study could be presented or published in an article, but would not include any information that would let others know who you are.

### 9.3 What happens to information about me after the study is over or if I cancel my permission?

As a rule, the researchers will not continue to use or disclose information about you, but will keep it secure until it is destroyed. Sometimes, it may be necessary for information about you to continue to be used or disclosed, even after you have canceled your permission or the study is over. Examples of reasons for this include:

- To avoid losing study results that have already included your information

- To provide limited information for research, education, or other activities (This information would not include your name, social security number, or anything else that could let others know who you are.)
- To help University and government officials make sure that the study was conducted properly

As long as your information is kept within the University of Michigan Health System, it is protected by the Health System's privacy policies. For more information about these policies, ask for a copy of the University of Michigan Notice of Privacy Practices. This information is also available on the web at http://www.med.umich.edu/hipaa/npp.htm. Note that once your information has been shared with others as described under Question 9.2, it may no longer be protected by the privacy regulations of the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA).

### 9.4 When does my permission expire?

Your permission expires at the end of the study, unless you cancel it sooner. You may cancel your permission at any time by writing to the researchers listed in Section 10 "Contact Information" (below).

## 10. CONTACT INFORMATION

### 10.1 Who can I contact about this study?

Please contact the researchers listed below to:

- Obtain more information about the study
- Ask a question about the study procedures or treatments
- Report an illness, injury, or other problem (you may also need to tell your regular doctors)
- Leave the study before it is finished
- Express a concern about the study

Principal Investigator: James Abelson, M.D., Ph.D.
Mailing Address: Rachel Upjohn Building, 4250 Plymouth Rd., Ann Arbor, MI 48109
Telephone: (734) 764-5348

Study Coordinator: Courtney Fons, B.A., B.S.
Mailing Address: Eastern Michigan University, 537 Mark Jefferson, Ypsilanti, MI, 48197
Telephone: (734) 487-4987

You may also express a concern about a study by contacting the Institutional Review Board listed below, or by calling the University of Michigan Compliance Help Line at 1-888-296-2481.

University of Michigan Medical School Institutional Review Board (IRBMED)
Argus I
517 W. William
Ann Arbor, MI 48103-4943

Telephone: 734-763-4768
Fax: 734-615-1622

e-mail: irbmed@umich.edu

If you are concerned about a possible violation of your privacy, contact the University of Michigan Health System Privacy Officer at 1-888-296-2481.

*When you call or write about a concern, please provide as much information as possible, including the name of the researcher, the IRBMED number (at the top of this form), and details about the problem. This will help University officials to look into your concern. When reporting a concern, you do not have to give your name unless you want to.*

## 11. RECORD OF INFORMATION PROVIDED

### 11.1 What documents will be given to me?

Your signature in the next section means that you have received copies of all of the following documents:

This "Consent to be Part of a Research Study" document. (*Note: In addition to the copy you receive, copies of this document will be stored in a separate confidential research file and may be entered into your regular University of Michigan medical record.)*

Other (specify): _____

## 12. SIGNATURES

**Research Subject:**

*I understand the information printed on this form. I have discussed this study, its risks and potential benefits, and my other choices with _____. My questions so far have been answered. I understand that if I have more questions or concerns about the study or my participation as a research subject, I may contact one of the people listed in Section 10 (above). I understand that I will receive a copy of this form at the time I sign it and later upon request. I understand that if my ability to consent for myself changes, either I or my legal representative may be asked to re-consent prior to my continued participation in this study.*

Signature of Subject: _____ Date: _____

Name (Print legal name): _____

Patient ID:_____ Date of Birth: _____

**Principal Investigator (or Designee):**

*I have given this research subject (or his/her legally authorized representative, if applicable) information about this study that I believe is accurate and complete. The subject has indicated that he or she understands the nature of the study and the risks and benefits of participating.*

| | |
|---|---|
| Name: _____ | Title: _____ |
| Signature: _____ | Date of Signature: _____ |