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ANXIETY DISORDERS (A PELISSOLO, SECTION EDITOR)

Correlates of Quality of Life in Anxiety Disorders: Review of Recent Research

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Abstract

Purpose of Review Anxiety disorders are highly prevalent conditions that have a detrimental impact on quality of life (QOL), particularly when left untreated. In the present review, we summarize recent literature, published within the last 3 years, on QOL in anxiety disorders, with a focus on factors that may play a role in the relationship between anxiety and QOL.

Recent Findings We organize our findings into four categories: (1) subjective distress, (2) behavioral responses, (3) functional impairment, and (4) clinical factors. Results indicate that greater anxiety symptom severity is linked with poorer QOL, and cognitive behavioral therapies for anxiety yield positive effects on QOL. Additional transdiagnostic mechanisms are highlighted, including anxiety sensitivity, distress tolerance, emotion regulation, and avoidant coping. We examine the role of functional impairment, and we discuss factors related to treatment, including comorbidity and longitudinal effects. We also consider early research from the COVID-19 pandemic.

Summary Understanding the underlying factors that contribute to QOL detriments provides important insight into the impact of anxiety disorders and identifies targets for enhancing QOL through treatment.

Keywords Anxiety disorders · Quality of life · Functional impairment · Avoidance · Comorbidity

Introduction

Anxiety disorders are estimated to have the highest lifetime prevalence rates of all psychiatric disorders (18.0–3.7%; [1]) and result in considerable functional impairment and economic burden [2•, 3, 4]. As a result, anxiety disorders have a significant and detrimental impact on QOL across the lifespan, particularly when left untreated [5, 6].

Quality of life (QOL) refers to a subjective evaluation of life in general and is often represented in the literature through multidimensional measurements of QOL, satisfaction with life, and overall wellbeing. Related to anxiety disorders, QOL has been used to estimate the impact of anxiety on daily functioning, predict long-term consequences of the disorder, and assess the effectiveness of treatment. The large majority of research focuses on health-related QOL, representing the impact of anxiety on health and health care, and is based on the subjective self-report of the individual. (A review of specific QOL measures is beyond the scope of this paper but can be found in [5].) QOL impairments among anxiety disorders have generally fallen into the following categories: physical health, emotional (or mental) health, occupational or educational functioning, social functioning, home and family functioning, and financial independence [6].

Prior reviews examining QOL among the anxiety disorders have generally focused on disorder-specific impacts and differences between individuals with and without anxiety disorders ([7]). Indeed, individuals with anxiety disorders are robustly shown to report poorer QOL relative to those without an anxiety disorder, regardless of the type of anxiety experienced [6, 7]. Meta-analytic research has further demonstrated that QOL improves significantly following cognitive behavioral therapy (CBT), the gold standard treatment for anxiety disorders [8]. In our current paper, we review recent literature, published within the last 3 years, on QOL in anxiety disorders, with a specific focus on correlates of QOL. Although prior reviews have highlighted the nature of QOL impairments among anxiety disorders, no review has

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yet articulated specific correlates of QOL. Symptom measures have been shown to account for only a small to moderate proportion of variance in QOL scores [9], suggesting that examining additional transdiagnostic factors may shed light on potential mediators and moderators of QOL and lead to enhancements in treatment.

In this article, we review recent research on the correlates of QOL in children, adolescents, and adults with anxiety disorders, including agoraphobia, generalized anxiety disorder (GAD), panic disorder (PD), selective mutism (SM), social anxiety disorder (SAD), and specific phobias (SPs). Rather than focus on diagnostic differences, we adopt a perspective commensurate with the Research Domain Criteria (RDoC) recommendations for assessing fundamental underlying mechanisms of dysfunction that cut across diagnostic categories [10]. We have organized our review into four areas of potential QOL correlates, with a focus on (1) subjective distress, (2) behavioral responses, (3) functional impairment, and (4) clinical factors.

Within subjective distress, we focus on anxiety-related symptoms and sensitivities that may impact QOL, including symptom severity, anxiety sensitivity, distress tolerance, and positive and negative affect. Within behavioral responses, we focus on maladaptive coping behaviors for anxiety that could perpetuate QOL impairments, including anxious avoidance, substance use, and emotion dysregulation. Within functional impairment, we examine the impact of anxiety on social, physical, and occupational functioning as they relate to QOL. Within clinical factors, we concentrate on influences adjacent to anxiety symptoms that may impact QOL, including biopsychosocial factors, comorbidity, treatment response, and longitudinal outcomes. Finally, we include a brief review of the burgeoning area of research into QOL and anxiety during the COVID-19 pandemic. We conclude with considerations for future research and recommendations for treatment based on our review.

Correlates Associated with Subjective Distress

Symptom Severity

Symptom severity in anxiety disorders has been linked to greater clinical burden, higher levels of comorbidity, and poorer treatment response [11]. Prior meta-analyses have highlighted the difference in QOL among individuals with clinical levels of anxiety symptoms compared to those without [6]. Recent research reaffirms these findings, documenting the direct effects of symptom severity and diagnostic status on QOL for individuals with anxiety disorders. Specifically, anxiety symptom severity was inversely associated with QOL among adolescents with anxiety [12–14], adults with anxiety [15–21], andolder adults with anxiety [22]. Research within community-based samplesunderscores the severity of QOL impairments for individuals with moderate tohigh levels of anxiety symptoms (e.g., [14]) and suggests that early intervention couldbe key to preventing severe functional impairment. Remission status alsocorrelated with QOL impairments. QOL was poorer among adults with a currentanxiety disorder compared to those in remission from an anxiety disorder [23], whereas individuals with current andremitted anxiety disorders reported poorer QOL than healthy controls [24].

Anxiety Sensitivity

Anxiety sensitivity is conceptualized as the fear of somatic symptoms of anxious arousal (e.g., heart palpitations, sweating, shaking) and the belief that these symptoms will have negative consequences [25]. Anxiety sensitivity is a correlate of both anxiety and depressive disorders and is associated with higher levels of disability [25–27]. Prior research has noted that dimensions of anxiety, such as a heightened sensitivity to anxious arousal, have been a better predictor of long-term disability than course trajectories [28] or distress intolerance [29]. Recent research provides preliminary support for anxiety sensitivity as a correlate of QOL in anxiety disorders, revealing that changes in anxiety sensitivity during CBT for anxiety predicted improvements in QOL among individuals with HIV/AIDS [30]. As an effective though underutilized target for clinical intervention [27], anxiety sensitivity may play a far more significant role in functional impairment and QOL than is currently documented.

Distress Tolerance

Distress tolerance is considered a transdiagnostic construct associated with the perceived and actual ability to tolerate distress [31]. Individuals low in distress tolerance may find emotional distress highly uncomfortable and seek opportunities to escape. Distress tolerance is associated with lower anxiety symptomatology and higher QOL in prior studies [32, 33], and thus could play a role in QOL for individuals with anxiety disorders. Recent research yields preliminary supportive data, finding that distress tolerance mediated the relationship between early childhood neglect and QOL in adulthood for adults with SAD or GAD [34]. However, some studies have noted that distress tolerance may not be predictive of impairment in anxiety disorders once other factors, such as anxiety sensitivity and negative affect, are considered [29].

Positive and Negative Affect

Emotion processing deficits, including heightened negative affect and dampened positive affect, are core components of anxiety and depressive disorders [35], and recent research has shown that they may also impact QOL for individuals with anxiety disorders. Positive affect positively predicted QOL among individuals with GAD, above and beyond negative affect and comorbid depression [36]. Relatedly, increases in positive affect predicted greater QOL improvement from pre- to post-treatment for individuals with SAD, particularly for those who reported low QOL at baseline [37]. Negative affect also moderated the effect of CBT on QOL, such that higher pre-treatment negative affect resulted in less QOL improvement during CBT for individuals with anxiety disorders [38•]. Attention to the affective experience, and particularly emotion regulation processes (see "Emotion Regulation" section below) during CBT may serve to enhance the impact of treatment on QOL for individuals with anxiety disorders.

Correlates Associated with Behavioral Responses

In an effort to cope with the discomfort of intense anxiety and panic, individuals with anxiety disorders often rely on maladaptive coping behaviors, such as anxious avoidance, substance use, and maladaptive emotion regulation strategies [11]. These behaviors can provide relief in the moment but ultimately maintain or worsen anxiety over time [39]. The extent to which anxious individuals engage in maladaptive coping behaviors, particularly avoidance and safety behaviors, may negatively impact QOL among those with anxiety disorders.

Experiential Avoidance and Safety Behaviors

Prior research has shown that avoidance behavior was a significant predictor of disability for individuals with anxiety disorders, both concurrently and 4 years later [26, 28]. Recent research found that greater reliance on avoidant and escape coping correlated with poorer QOL among individuals with neurotic spectrum disorders [17], and experiential avoidance inversely predicted QOL for individuals with PD symptoms [40•]. However, other recent publications yield a contrasting pattern, finding that experiential avoidance of anxiety-provoking stimuli was not a significant correlate of QOL among individuals with anxiety disorders after accounting for positive and negative affect [38•].

Safety behaviors, often considered a form of subtle avoidance for individuals with anxiety disorders, have yielded similarly mixed results. Among a clinical analog sample of individuals with anxiety, greater engagement in safety behaviors and stronger positive beliefs about safety behaviors were associated with lower QOL [41]. Moreover, preventative use of safety behaviors mediated the relationship between anxiety symptom severity and QOL [40•]. However, Butler et al. [42] found no relationship between safety behaviors and QOL among a treatment-seeking sample of individuals with SAD. Given that reducing avoidance is a primary treatment target in CBT, a more nuanced understanding of the relationship between avoidance and QOL may enable CBT to be more impactful for treatment-seeking individuals with anxiety disorders.

Substance Use Behaviors

Anxiety disorders are highly comorbid with substance use disorders [43], and prior research has shown that individuals with anxiety who regularly use or abuse substances (e.g., alcohol and/or drugs) report lower QOL than those who do not use substances [44, 45]. Even more specifically, Robinson et al. [46] found that individuals with anxiety disorders who use substances to cope with anxiety reported lower QOL than those who do not use substances to cope. However, new research in this area is limited. Only one recent article examined QOL related to substance use in anxiety, finding that individuals with anxiety disorders who used cannabis (but did not meet criteria for cannabis use disorder) reported poorer QOL than non-cannabis users in the areas of mental health and role functioning, but non-cannabis users did not differ in QOL compared to those with comorbid cannabis use disorder [47]. Future research should consider substance type, frequency, and purpose of use in understanding substance use behaviors as a correlate of QOL in anxiety disorders.

Emotion Regulation

As detailed in the "Positive and Negative Affect" section above, the affective experience can impact QOL and treatment outcome for individuals with anxiety disorders. It would follow, then, that difficulties regulating emotion effectively may also correlate with QOL. Indeed, recent research suggests that emotion dysregulation in anxiety may be an important predictor of QOL in anxiety disorders. Among individuals with GAD, less emotion regulation flexibility resulted in poorer QOL and greater emotional distress [48]. Relatedly, decentering (the ability to observe thoughts and feelings as objective events in the mind rather than personally identifying with them) was found to be a moderator of treatment, such that larger increases in decentering predicted greater improvements in QOL following group CBT for

adults with anxiety disorders [49]. However, when individuals with GAD were treated using emotion regulation therapy (ERT), improvements in emotion regulation via attention allocation were correlated with improved functioning but not improved QOL [4, 50]. Thus, incorporating emotion regulation, particularly strategies that enhance emotion regulation flexibility, may support QOL improvements among individuals with anxiety disorders.

Correlates Associated with Functional Impairment

Individuals with anxiety disorders experience significant impairment in functioning in global, social, occupational, and physical domains [4]. Prior research has emphasized the negative impacts of anxiety on various functional domains of life, thereby contributing to poorer QOL overall [5, 6]. Recent research replicates and extends these findings, highlighting potential diagnostic differences.

Social Functioning

Individuals with anxiety disorders endorsed greater perceived QOL detriments in the social domain, reporting a smaller social network, fewer social activities, and less social support than non-anxious individuals [51]. As evidenced in prior disorder-specific research [5], SAD showed significant impairments in social-related QOL domains. Notably, individuals with SAD were shown to have the highest functional impairment in the "getting along" disability domain, relative to others with MDD, OCD, and non-clinical national norms [52•].

Physical Health

QOL detriments in the realm of physical health are often represented by overutilization of medical health services and lower physical activity [5]. Recent research suggests that PD and GAD may result in poorer physical health and, subsequently, poorer QOL. Specifically, individuals with PD or subthreshold panic symptoms were more likely to utilize medical and psychological health services, and endorsed poorer QOL, compared to individuals without panic symptoms [19]. Similarly, adults with GAD endorsed low QOL as well as greater healthcare resource utilization in the past 6 months [21]. Lower physical activity was also found to relate to poorer QOL among individuals with clinical levels of worry such as those found in GAD [53].

Occupational Functioning

Recent research highlights the impact of anxiety disorders on work-related functioning and, subsequently, QOL. Specifically, employment status was a significant predictor of QOL among individuals with anxiety disorders [17]. Additionally, a network analysis of individuals with GAD demonstrated strong connections between GAD and two areas of QOL: satisfaction with working ability and ability to engage in daily activities [54]. Adults with GAD also demonstrated more impairment in work productivity and activity in addition to lower QOL compared with adults without GAD [21].

Correlates Associated with Clinical Factors

Biopsychosocial Factors

Biopsychosocial characteristics are understudied in the area of QOL in anxiety disorders, often serving as control variables rather than key variables of interest. Prior research into these factors has been both limited and mixed. Specifically, early studies found that older age was associated with poorer QOL for individuals with PD [55, 56], but systematic reviews and meta-analyses have shown no effects of age or gender on QOL across anxiety disorders [6, 9]. More disorder-relevant variables, such as age of symptom onset, may be more applicable to QOL. For instance, prior research revealed that later age of onset in GAD is associated with poorer QOL, particularly in the domain of physical health, for older adults [57, 58]. The present literature search did not yield specific findings related to QOL and sociodemographic variables, but recent research did highlight the importance of biological factors. Specifically, a genetic vulnerability to anxiety disorders was negatively correlated with vulnerability to QOL, suggesting that common genetic components may underlie the link between these two constructs [59]. The effects of biological factors on QOL in anxiety warrant further investigation, particularly with current technologies such as neuroimaging, psychophysiology, and blood-based approaches.

Comorbidity

Comorbidity in anxiety disorders is associated with more severe symptoms, a more chronic course, and greater functional impairment [11, 26, 28]. A large proportion of individuals with an anxiety disorder meet criteria for an additional psychiatric disorder, most often another anxiety disorder (48–68%) or depressive disorder (81%; [1, 60]). Recent research expands on the specific QOL impairments associated with comorbidity in anxiety disorders. Individuals with anxiety disorders who also had comorbid disorder(s) endorsed significantly lower QOL relative to individuals without comorbidity and individuals in remission from anxiety disorders [2•, 13, 61]. Within some samples, only individuals with comorbid disorders reported poorer QOL than healthy controls, whereas individuals with a single anxiety disorder did not [62, 63].

Depression comorbidity emerged as a particularly notable correlate with QOL in anxiety disorders. Depression symptoms demonstrated a strong inverse correlation with QOL among individuals with GAD and PD [15, 54]. Among individuals with SAD, only those with comorbid depression or OCD reported greater disability and lower QOL than those without comorbidity [52•]. Related to treatment outcomes, Wilner and colleagues found that the number of comorbid diagnoses — broadly defined — did not predict change in QOL following CBT for anxiety [28]. However, among individuals with comorbid SAD and MDD, participants who were able to achieve MDD remission following pharmacotherapy had significantly better improvements in QOL and functioning than those without MDD remission [64]. Thus, comorbid depression may be especially relevant for QOL outcomes in treatment for anxiety disorders.

Treatment Response

CBT and pharmacotherapy both yield small to moderate positive effects on QOL outcomes [8, 65]. Recent research has replicated prior findings, confirming that CBT yields decreased symptom severity and improved QOL for children and adults with anxiety disorders [38•, 42, 66–69]. Meta-analytic research strengthens these findings [70•, 71, 72•]. Interestingly, research points to symptom severity as a moderator of treatment type and QOL improvement, such that individuals with greater symptom severity experienced greater QOL improvements following CBT, whereas individuals with lower symptom severity experienced greater QOL improvements following acceptance and commitment therapy (ACT; [73]).

The impact of treatment has also extended to CBT that incorporates virtual reality exposures (VR-CBT), which yielded QOL improvements for individuals with SAD [74] and SP [75, 76], although sample sizes were small. Importantly, recent research has extended these findings to variations of traditional CBT that may increase accessibility to effective treatment. Specifically, internet-delivered CBT (iCBT) for anxiety disorders yielded a moderate effect on QOL, both in single studies [77–80] and meta-analyses [81•, 82]. In contrast, a small non-significant effect was found in a study on iCBT for SAD, PD, and OCD, although sample size was small [83]. Of note, positive treatment outcomes may not be exclusive to CBT. One RCT demonstrated a positive effect of anthroposophic art therapy on reducing symptom severity and improving QOL among women with anxiety [84].

Longitudinal Outcomes

Epidemiological research indicates that anxiety disorders have a high ratio of 1-year lifetime prevalence, suggesting a chronic recurrent course [11]. Although treatment for anxiety disorders produces moderate QOL improvements, not all individuals respond to these front-line interventions, and those who are treatment refractory exhibit particularly low QOL and increased rates of suicide [85]. Recent research lends additional data to the longitudinal effects of treatment on QOL and the impacts of non-remission.

Unique research has emerged on the very long-term effects of CBT on QOL. An investigation of QOL 12–31 years after individuals with anxiety disorders completed group CBT for PD found that reported QOL was not significantly different from that of the general population [86•]. Likewise, for individuals in remission from anxiety disorders 2–14 years following treatment, QOL remained improved, whereas the majority of individuals who remained symptomatic following treatment reported severely impaired QOL [2•]. However, even for treatment refractory individuals, there may still be hope for improvement. Individuals with SAD who were treatment refractory to medication yielded positive changes in QOL following cognitive therapy, and these gains were maintained at 1-year follow up [69].

QOL and Anxiety During COVID-19

The COVID-19 pandemic has offered a unique opportunity to observe the relationship between anxiety and QOL. Although publication on the impact of COVID-19 is in its nascent phases, emerging research both reaffirms the relationship between anxiety and QOL and highlights potential correlates, particularly among non-clinical populations. Supporting prior research, anxiety symptom severity was negatively correlated with QOL among individuals under COVID lockdown conditions, with females, older individuals, unemployed individuals, and individuals with or a caretaker for a chronic medical condition experiencing lower levels of QOL [87, 88]. Research during COVID has also highlighted the role of maladaptive coping strategies, such that higher levels of avoidant coping, substance use, and denial as methods to cope with COVID-related anxiety predicted poorer QOL for non-clinical adults [89, 90]. At the same time, higher levels of positive coping predicted better QOL. External factors also played a protective role, such that social and environmental support was negatively predictive of anxiety and positively predictive of QOL [91]. Interestingly, higher levels of pre-COVID QOL acted as a protective factor against anxiety during the pandemic in non-clinical populations [92–94]. It should be noted that the majority of thisresearch utilized concurrent, incentivized, online data collection, andlongitudinal data will lend further strength to these findings.

Conclusion

Both prior and current research demonstrates the detrimental effects of anxiety disorders on QOL. Our review, which summarizes research in this area over the past 3 years, is the first to consider specific correlates of QOL in the context of anxiety disorders. Recent literature highlighted factors related to subjective distress, behavioral responses, functional impairment, and behavioral responses. We were most interested by the transdiagnostic correlates that emerged as influential, including anxiety sensitivity, distress tolerance, emotion and emotion regulation, and avoidance. These findings suggest that ways in which individuals with anxiety disorders *experience* and *respond to* their emotions are different from non-anxious individuals and may partly explain their reported lower levels of QOL. It may be that the experience of anxiety is heightened, triggering increased distress and negative affect, which anxious individuals then have difficulty downregulating. In an attempt to cope, these individuals avoid or use safety behaviors, which in turn disrupts their occupational, social, and physical functioning.

These transdiagnostic factors offer potential targets for treatment enhancement. The positive impact of CBT, including VR-CBT and iCBT, was confirmed through the recent research summarized here. However, not all individuals respond to CBT, and even those in remission following treatment may still experience poorer QOL than those who have never had an anxiety disorder [24]. Given the nuanced role that many of these correlates play, it seems critical to incorporate a thorough QOL assessment at the beginning of treatment. Future research examining these correlates as components of treatment outcome could further shed light on their role, and treatment that directly targets them (such as ERT to improve emotion regulation, or ACT to reduce experiential avoidance) may help close the QOL gap. Additionally, transdiagnostic treatments, such as the Unified Protocol, which addresses common emotion regulation deficits in emotional disorders to effect symptom change across a broad range of outcomes [71], may lessen the detrimental impact of comorbid depression on QOL.

Finally, preliminary research examining the impact of the COVID-19 pandemic emphasizes the potential protective role of these correlates during a world-wide period of anxiety and stress. Although much research considers the detrimental impact of anxiety on QOL, COVID data showed a unique, if not unsurprising, reverse relationship: higher pre-pandemic QOL mitigated the impact of the pandemic on anxiety. Additionally, positive social functioning and adaptive coping were protective of QOL during this period of stress and uncertainty. Thus, the relationship between QOL and anxiety disorders is bidirectional, and understanding the mediating and moderating mechanisms of this relationship may help us build resilience and improve treatment outcomes for individuals with anxiety disorders.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

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