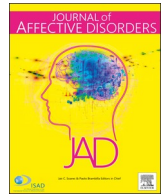




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## Research paper

## Achieving complete mental health despite a history of generalized anxiety disorders: Findings from a large, nationally representative Canadian survey

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## ABSTRACT

Ideally, the clinical goal for individuals with a history of anxiety disorder is not *only* to remit from the disorder, but also to reach optimal well-being. This broader concept of recovery aligns with Keyes' concept of complete mental health (CMH), including presence of happiness or life satisfaction, and social and psychological well-being, and absence of any past year mental illness including anxiety disorders, depressive disorders, substance dependence and suicidal ideation. This study's aim was to identify factors associated with CMH in a population-based sample of Canadians with a previous diagnosis of Generalized Anxiety Disorder (GAD) ( $n = 2128$ ), of whom 40% are currently in CMH. Data were from the 2012 Canadian Community Health Survey-Mental Health (response rate = 68.9%). The World Health Organization version of the Composite International Diagnostic Interview (WHO-CIDI) scales were used to define lifetime and past-year GAD. Factors associated with complete mental health include female gender, older age, being married, reporting good to excellent physical health, being free of chronic insomnia, being able to manage household activities without difficulties, using religion or spirituality to cope, having a confidant, and never having had a major depressive disorder nor substance dependence. Results of this study suggest many with a history of anxiety disorders can achieve CMH and point to factors that appear to facilitate this process.

## 1. Introduction

Anxiety disorders affect 12% of the Canadian population (Public Health Agency of Canada, 2014). In comparison to the general population, individuals with anxiety disorders are more likely to be divorced, unemployed, obese or substance abusers (Greenberg et al., 1999). Anxiety disorders are also associated with twice the risk of subsequent onset of suicidal ideation and three times the risk of suicide attempts (Sareen et al., 2005). The economic costs of anxiety disorders are substantial due to workplace productivity loss and health care expenses (Greenberg et al., 1999).

Given the high burden of anxiety disorders, there is a great deal of interest in factors associated with remission from anxiety (Destoop et al., 2013; Iancu et al., 2014). The ideal goal, however, would be to help patients not only remit, but also be fully engaged in and enjoying life. This concept, termed “complete mental health”, has been used increasingly in the literature (Fuller-Thomson et al., 2016;

Baiden and Fuller-Thomson, 2016; Keyes, 2002; Keyes, 2005). Complete mental health is defined as the state of having both the presence of positive mental health (i.e. feeling good about oneself, one's relationships with others, one's connections to community or society and being able to function well in daily activities) and the absence of current mental illness (Gilmour, 2014; Keyes, 2009). Incomplete mental health is associated with increased burden of disease, limitations in activities and ability to work, healthcare utilization, and mortality (Keyes and Grzywacz, 2005; Keyes, 2005, 2004).

The aim of this study was to investigate the factors associated with complete mental health among a population-based sample of Canadians who have previously suffered from generalized anxiety disorders. When studying the relationship between a history of anxiety disorders and current complete mental health it is important to account for potentially confounding variables. A review of the literature suggests these variables can be grouped into the following categories: 1) demographics, 2) socioeconomic status, 3) health and mental health

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conditions, 4) health behaviours, 5) marriage and social support, 6) adverse childhood experiences, and 7) coping strategies, such as exercise and spirituality. Each of these is discussed, in brief, below. Where possible, we reference the emerging literature on complete mental health to examine possible factors that may attenuate the direct association between anxiety disorders and complete mental health. When these links have not yet been explored, we will turn to the literature on well-being and life satisfaction.

There are a number of demographics that may be important to consider when investigating anxiety and complete mental health. The prevalence of generalized anxiety disorder is shown to be highest in mid-life cohorts (i.e. those aged 30–59) (Kessler et al., 2005), and the odds of complete mental health are lowest among younger age groups (Gilmour, 2014). White populations have been shown to have a higher prevalence of anxiety disorders than racial and ethnic minorities (Asnaani et al., 2010; Budhwani et al., 2015; Johnson-Lawrence et al., 2013). Blacks have been found to be more likely to report complete mental health than whites (Keyes, 2002). Aboriginal Canadians are less likely to have complete mental health in comparison to non-Aboriginal Canadians, although this may be accounted for by factors such as socioeconomic status (Gilmour, 2014). The prevalence of anxiety disorders among women is approximately twice that of men (Jacobi et al., 2004; Leach et al., 2008; McLean et al., 2011; Wittchen, 2002); however, women and men are equally likely to have complete mental health (Gilmour, 2014).

The prevalence of anxiety disorders is inversely associated with socioeconomic status (Green and Benzeval, 2013; Jacobi et al., 2004; Kessler et al., 1994; Muntaner et al., 2004, 1998; World Health Organization, 2000). Likewise, complete mental health is more common among those with at least post-secondary education and/or a high-income level in comparison to those with lower educational attainment and/or income (Gilmour, 2014).

The prevalence of anxiety disorders is higher among individuals with chronic health conditions, such as irritable bowel syndrome, asthma, cardiovascular disease, cancer, or chronic pain than those without (Katon et al., 2007; Mago et al., 2006; Roy-Byrne et al., 2008; Soo et al., 2009). Those in complete mental health have fewer chronic health conditions and are less likely to report chronic pain (Gilmour, 2014).

The link between anxiety disorders and other mental health conditions is well documented in the literature. Depression is frequently comorbid with anxiety disorders (Baldwin et al., 2002; Carter et al., 2001; Wittchen, 2002). Those with both anxiety disorders and mood disorders are particularly prone to suicide attempts (Sareen et al., 2005). To be in complete mental health, one must be without current mental illness; as such, we hypothesize that the chronic nature of many mental illnesses would result in a lower prevalence of complete mental health among those with a history of these disorders.

Positive health behaviours are correlated with both the absence of anxiety disorders and the presence of complete mental health. Anxiety disorders are strongly associated with smoking (Morrell and Cohen, 2006), substance abuse (Grant et al., 2004), and physical inactivity (Goodwin, 2003; Grant et al., 2009). Higher life satisfaction correlates with healthy behaviours such as not smoking and engaging in physical activity (Grant et al., 2009). A lower prevalence of those with complete mental health are alcohol dependent (Keyes, 2005). Finally, moderate intensity exercise has been shown to promote better subjective well-being (Lampinen et al., 2006).

Sleep is also an important health behavior to consider. Those who have an anxiety disorder are twice as likely to have difficulty initiating and maintaining sleep when compared with the general population (Soehner and Harvey, 2012). Symptoms of insomnia are inversely correlated with psychological and subjective well-being (Hamilton et al., 2007).

Being in a first marriage, compared to never being married, is shown to reduce the risk of incident anxiety disorders, while the risk of

anxiety disorders is higher among those who have been divorced than among those who are in a first marriage (Scott et al., 2010). In turn, married individuals are more likely to have complete mental health than those who are widowed, separated, divorced or never married (Gilmour, 2014). Having a confidant is highly associated with complete mental health (Fuller-Thomson et al., 2016; Baiden and Fuller-Thomson, 2016).

Although not well studied in the positive psychology literature, adverse childhood experiences may be important to examine in relation to anxiety and complete mental health. Several studies have found a link between childhood physical and sexual abuse and anxiety disorders (Fergusson et al., 2008; Green et al., 2010). Sexual abuse, physical abuse and exposure to parental domestic violence, have been strongly linked to a lower prevalence of CMH (Afifi et al., 2016; Fuller-Thomson et al., 2019).

Finally, religiosity and spirituality are associated with the absence of mental illness (Glas, 2007) and presence of complete mental health (Gilmour, 2014).

## 2. Methods

### 2.1. Sample

As has been described elsewhere (Fuller-Thomson et al., 2016; Baiden and Fuller-Thomson, 2016), this study was based on secondary analyses of the public use data set of the nationally representative 2012 Canadian Community Health Survey-Mental Health (CCHS-MH) (Statistics Canada, 2013a). There were 25,113 respondents which was an overall response rate of 68.9%, (Statistics Canada, 2013a). Two subsamples from the CCHS-MH study population were used for the current study. Firstly, we included all participants who had complete data on the questions regarding lifetime generalized anxiety disorder (GAD), complete mental health (CMH) and all the covariates included in this analysis ( $n = 21,067$ ). As such, our sample excludes participants under the age of 20 because they were not questioned about adverse childhood experiences. Among those 21,067, there were 2128 respondents who had ever had GAD. These respondents comprised our second subsample.

### 2.2. Measures

#### 2.2.1. Outcome variable: complete mental health

The main outcome variable examined in this study was complete mental health and was measured as a binary variable comprised of three elements: 1) the absence of *mental illness* in the past year (i.e. depressive episode, generalized anxiety disorders, bipolar disorders, alcohol or drug dependence, or suicidal ideation). These variables were derived from the World Health Organization version of the Composite International Diagnostic Interview (WHO-CIDI), a structured diagnostic interview that generates diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) and the International Classification of Disease (ICD-10). These scales have adequate validity and reliability. The concordance between these scales and clinical interviews are adequate range from 0.73 for anxiety/phobic disorders and 0.78 for depressive disorders to 0.83 for substance dependence (Janca et al., 1992; Wittchen, 1994). The test-retest reliability and inter-rater reliability scores are above 90% for these scales (Wittchen, 1994); 2) Emotional well-being (i.e. happiness or life satisfaction), and 3) social well-being and psychological well-being. The latter two elements were assessed using the Mental Health Continuum - Short Form (MHC-SF) (Lamers et al., 2011). The MHC-SF is a 14-item instrument measuring dimensions of positive mental health, including emotional well-being (e.g., during the past month, how often did you feel: happy and/or satisfied with your own life?), social well-being (e.g., during the past month, how often did you feel that you had something important to contribute to society?), and psychological well-

being (e.g., during the past month, how often did you feel that you liked most parts of your personality?) (Lamers et al., 2011; Statistics Canada, 2013b). The psychometric properties of the MHC-SF have been well established (Lamers et al., 2011). Individuals were classified as being in “complete mental health” if they reported at least 1 of the 2 measures of emotional well-being (i.e. happiness and/or life satisfaction in past year) and at least 6 of the 11 measures of psychological and/or social well-being “every day” or “almost every day” during the past month in conjunction with the absence of any of the above listed forms of mental illness in the past year. For more information refer to (Statistics Canada, 2013b).

### 2.2.2. Key exposure variable

*Lifetime Generalized Anxiety Disorder (GAD)*. Participants were classified as having a lifetime GAD if they met the lifetime criteria from the WHO–CIDI definition for GAD which is comprised of five elements: “1) excessive anxiety and worry about at least two different events or activities that lasted at least six months; 2) finding it difficult to control the worry; 3) the anxiety and the worry were associated with three or more of the symptoms associated with anxiety; 4) the focus of the anxiety and worry was not confined to features of an Axis 1 disorder; and 5) the anxiety, worry, or physical symptoms caused clinically significant distress or significant impairment in social, occupational, or other important areas of functioning” (Statistics Canada, 2013b), p.84).

### 2.2.3. Other variables in the analyses

*Socio-demographic Variables* examined included sex and race (Non-Aboriginal White versus non-White and/or Aboriginal, based on self-report) and age (measured in decades).

Three adverse childhood experiences were assessed. Exposure to chronic *parental domestic violence* was a dichotomous variable based on the respondent reporting that before the age of 16 they had seen or heard in their home at least 11 times their “parents, step-parents or guardians hit each other or another adult”. An individual was defined as having experienced *childhood physical abuse* if they reported that an adult had slapped them on the face, head or ears or hit or spanked them with something hard to hurt them at least three times and/or pushed, grabbed, shoved or threw something at them to hurt them at least three times and/or an adult had at least once kicked, bit, punch, choked, burned, or physically attacked them. *Childhood sexual abuse* was derived from a response of at least once to the question “How many times did an adult force you or attempt to force you into any unwanted sexual activity, by threatening you, holding you down or hurting you in some way?”

Socioeconomic factors examined include a dichotomous variable on post-secondary graduation and a measure of annual household income level (<\$20,000, \$20,000-\$39,999, \$40,000-\$59,999, \$40,000-\$59,999, \$60,000-\$79,999, \$80,000 or higher). Marital status was dichotomized (married/common-law versus single/divorced/widowed).

*Health Behaviours and Health*: Using a derived variable from Statistics Canada, smoking status was assessed in three categories: never smoked, former smoker and current smoker. Obesity was also categorized into three groups: a body mass index (BMI) of 30 or higher versus less; and a missing category (including refused and non-response). The BMI was calculated from self-reported weight and self-reported height.

Chronic pain refers to the degree of pain that is usually felt by the respondents and the extent to which such pain prevents the person from performing certain daily Activities of daily living limitations were posed to respondents by asking “In the last 30 days, how much difficulty did you have in taking care of your household responsibilities?” (none/mild versus moderate/severe). *Self-reported physical health* was dichotomized into fair/poor vs. excellent/very good or good. *Substance abuse or dependence* was derived from lifetime algorithms for “Alcohol Abuse or Dependence” and “Drug Abuse or Dependence (including Cannabis)” based on WHO-CIDI criteria. Further details about these

measures are available (Statistics Canada, 2013b).

Three coping strategies were examined: 1) Religious coping was assessed based on the question “To what extent do your religious or spiritual beliefs give you the strength to face everyday difficulties?” (a lot/somewhat/a little vs. ‘not at all’). 2) Physical activity level was based on the number of times participants spent doing vigorous or moderate physical activity within the past 7 days. For more information on this variable please refer to (Statistics Canada, 2013b). 3) Availability of a confidant was based upon the question “I have close relationships that provide me with a sense of emotional security and well-being” (strongly agree/agree vs. disagree/strongly disagree).

Participants were classified as having a lifetime depressive disorder if they met the lifetime criteria from the WHO-CIDI definition for *Major Depressive Episode* based on 87 standardized questions. The measure has excellent reliability and validity. For more information please refer to (Statistics Canada, 2013a).

*Duration of longest episode of anxiety disorders* was categorized as <1 years, 1–1.99 years, 2–4.99 years, 5–9.99 years, 10+ years, and missing data.

### 2.2.4. Statistical analysis

In the full sample ( $n = 21,067$ ), we conducted chi-square tests to provide a profile of those with and without CMH. We also completed a logistic regression analysis with complete mental health as the outcome and lifetime GAD as the key exposure variable, adjustments were made for gender, race, age, income, education, marital status, lifetime alcohol and/or drug abuse, smoking status, obesity, physical activity level, religiosity, availability of confidant and obesity lifetime depression, chronic pain, insomnia, self-rated physical health, and Activities of Daily Living (ADLs), and Adverse Childhood Experiences (ACEs): physical abuse, sexual abuse and exposure to chronic parental domestic violence,.

In the subsample of those with a history of GAD ( $n = 2128$ ), we conducted a frequency test to determine the prevalence of those without GAD in the past year and the percentage of those free of any mental illness in the past year (i.e. depressive episode, anxiety disorders, bipolar disorders, alcohol or drug dependence, or suicidal ideation). We also conducted chi-square tests to examine the association between duration of longest episode of GAD and prevalence of freedom from GAD, freedom from any mental illness and complete mental health in the past year.

To identify correlates of complete mental health among those with a history of GAD, we conducted a logistic regression analysis similar the logistic regression of the full sample, discussed above. Multicollinearity was not a problem in either the full sample or the subsample of respondents with a history of anxiety disorders; The maximum correlation coefficient was below 0.40 in both samples. All data were weighted to adjust for the probability of selection and non-response, but sample sizes are reported in their original, unweighted form.

## 3. Results

Only 28% of those with a history of generalized anxiety disorders had GAD in the past year, indicating that 72% were in remission from GAD. Fifty-eight percent of individuals who had previously had GAD were free of *all mental illness* in the past year (i.e. GAD, depressive episode major depressive disorder, bipolar disorder, alcohol or drug dependence, and/or suicidal ideation). Forty percent of those with a history of GAD were in complete mental health, indicating that they not only had no GAD nor other mental illness in the past year, they also were happy and/or satisfied with their life on an almost daily basis and had high levels of social and psychological well-being. This percentage was significantly lower than the 76% of those without any history of GAD who were in CMH ( $p < .001$ ).

Table 1 provides a profile of those with and without complete mental health in the general population. Those with CMH are much less

**Table 1**

Comparison of those with and without complete mental health among adults age 20 and older ( $n = 21,067$ )<sup>1</sup>.

	Not Complete MH ( $n = 5,902$ )	Complete MH ( $n = 15,165$ )	p-value <sup>2</sup>
<b>Lifetime History of Generalized Anxiety Disorder</b>			
No	79.9%	95.2%	< 0.001
Yes	20.1%	4.8%	
<b>Demographics</b>			
<b>Sex</b>			
Male	49.9%	48.9%	= 0.22
Female	50.1%	51.1%	
<b>Race</b>			
Visible minority	23.4%	21.9%	= 0.023
White only	76.6%	78.1%	
<b>Age</b>			
20s	21.9%	16.0%	< 0.001
30s	18.2%	17.2%	
40s	20.2%	18.9%	
50s	19.6%	20.5%	
60s	11.3%	15.1%	
70s	6.0%	8.4%	
80s	2.8%	3.9%	
<b>Adverse Childhood Experiences</b>			
<b>Domestic Violence</b>			
Never witnessed or witnessed $\leq 10$ times	93.1%	96.6%	< 0.001
Witnessed 11 or more times	6.9%	3.4%	
<b>Physical Abuse</b>			
Not physically abused	63.6%	77.2%	< 0.001
Yes physically abused	36.4%	22.8%	
<b>Sexual Abuse</b>			
Not sexually abused	90.0%	95.4%	< 0.001
Sexually abused	10.0%	4.6%	
<b>Socioeconomic Status</b>			
<b>Education</b>			
No post secondary degree	38.7%	34.9%	< 0.001
Post secondary graduate	61.3%	65.1%	
<b>Household income</b>			
< \$20,000 (Ref)	6.7%	3.2%	< 0.001
\$20,000 to \$39,999	13.9%	10.9%	
\$40,000-\$59,999	20.0%	17.4%	
\$60,000-\$79,999	18.1%	17.6%	
$\geq$ \$80,000	41.3%	50.9%	
<b>Marital Status</b>			
Single/divorced	42.6%	31.2%	< 0.001
Married/common-law	57.4%	68.8%	
<b>Health Behaviors &amp; Health</b>			
<b>Smoking Status</b>			
Never smoker	33.7%	38.4%	< 0.001
Former smoker	39.8%	41.7%	
Current smoker	26.5%	19.9%	
<b>Obesity</b>			
BMI < 30 (Ref)	78.8%	78.1%	= 0.023
Obese (BMI = 30-39.9)	19.1%	19.1%	
Missing	2.1%	2.8%	
<b>Insomnia</b>			
No	76.6%	89.4%	< 0.001
Yes	23.4%	10.6%	
<b>Debilitating Pain</b>			
No	77.2%	88.5%	< 0.001
Yes	22.8%	11.5%	
<b>Difficulty managing household activities</b>			
Yes	28.4%	10.3%	< 0.001
No	71.6%	89.7%	
<b>Self reported Physical Health</b>			
Fair or poor	24.6%	10.1%	< 0.001
Good, very good or Excellent	75.4%	89.9%	
<b>Lifetime History of Substance Abuse or Dependence</b>			
No	67.8%	81.4%	< 0.001
Yes	32.2%	18.6%	
<b>Positive Coping Strategies</b>			
<b>Uses Religious Coping</b>			
Not at all	33.7%	26.4%	< 0.001
Yes- uses religious coping	66.3%	73.6%	

**Table 1 (continued)**

	Not Complete MH ( $n = 5,902$ )	Complete MH ( $n = 15,165$ )	p-value <sup>2</sup>
<b>Physical Activity</b>			
Inactive	31.8%	25.8%	< 0.001
Some activity	30.0%	27.7%	
Moderate or more	38.2%	46.5%	
<b>Availability of Confidant</b>			
No	6.4%	1.1%	< 0.001
Yes	93.6%	98.9%	
<b>Mental Health</b>			
<b>Major depressive disorder</b>			
No	73.9%	94.0%	< 0.001
Yes	26.1%	6.0%	

<sup>1</sup> Sample sizes are presented in their unweighted form. Percentages are weighted to adjust for the probability of selection and non-response according to Statistics Canada data release guidelines.

<sup>2</sup> p-value is derived from a chi-square test.

likely to have ever experienced GAD than those not in CMH (4.8% vs 20.1%;  $p < .001$ ). Those in CMH were also more likely than those in less optimal mental health to be White, older, to have a post-secondary degree, to have a high income, to be married or living common law compared to single, widowed or divorced, to have never smoked, to report good to excellent health, to use religious coping to face everyday difficulties, to be physically active, and to have a confidant. Those in CMH were less likely than those not in CMH to have experienced childhood sexual abuse, physical abuse or exposure to chronic parental domestic violence, to suffer from chronic insomnia or debilitating pain, to have difficulty managing their daily household activities, to have a lifetime history of substance abuse or major depressive disorders.

In the fully adjusted model in the full sample, the odds of CMH were 2.51 (95% CI = 2.23-2.82) for those without a history of GAD compared to those with GAD at some point in their life.

In the second part of our analyses, the sample was restricted to those who had ever had GAD ( $n = 2128$ ). The duration of the longest GAD episode was significantly ( $p < .001$ ) and negatively related to the prevalence of 1) remission from GAD in the past year; 2) freedom from any mental illness in the past year, and; 3) CMH (Please see Table 2). Among those whose longest episode of GAD was less than one year, 83.5% were free of GAD in the past year and 45.5% were in CMH. For those who had experienced a GAD episode of ten or more years duration, 50.2% were in remission from GAD in the preceding year and 26.8% were in CMH.

As shown in Table 3, factors associated with complete mental health among those with a history of GAD include female gender, older age, being married, reporting good to excellent physical health, being free of chronic insomnia, being able to manage household activities without difficulties, using religion or spirituality to cope, having a confidant, and never having had a major depressive disorder nor substance dependence. Once other characteristics were taken into account, those

**Table 2**

Prevalence of Individuals with Past Year Generalized Anxiety Disorder, Those free of Mental illness or addictions in the past year and those in Complete Mental Health. Sample: Those with a History Generalized Anxiety Disorder in the CCHS-MH ( $n = 2128$ ).

Longest Duration of Anxiety Disorders	% without GAD in past year	% without mental illness in past year	% in CMH in past year
< 1 year (Ref)	83.5%	67.3%	45.5%
1-1.9 years	76.8%	67.3%	49.0%
2-4.9 years	70.5%	59.2%	40.8%
5-9.9 years	71.3%	58.0%	38.7%
10+ years	50.2%	36.4%	26.8%
No answer	57.9%	36.0%	13.6%
<b>P-value</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>

**Table 3**  
Logistic Regression Analysis of Complete Mental Health Among Those with a History Generalized Anxiety Disorder ( $n = 2128$ ).

	Fully Adjusted Model
<b>Demographics</b>	
<b>Sex</b>	
Male (Ref)	1.00
Female	1.52 (1.21, 1.90)
<b>Race</b>	
Visible minority (Ref)	1.00
White only	1.27 (0.92, 1.75)
<b>Age (by decade)</b>	1.19 (1.11, 1.28)
<b>Adverse Childhood Experiences</b>	
<b>Domestic Violence</b>	
Never witnessed or witnessed $\leq 10$ times	1.34 (0.91, 1.97)
Witnessed 11 or more times (Ref)	1.00
<b>Physical Abuse</b>	
None	0.89 (0.71, 1.12)
Abused (Ref)	1.00
<b>Sexual Abuse</b>	
None	0.94 (0.69, 1.29)
Abused (Ref)	1.00
<b>Socioeconomic Status</b>	
<b>Education</b>	
No post secondary (Ref)	1.00
Post secondary graduate	0.84 (0.67, 1.04)
<b>Household income</b>	
< \$20,000 (Ref)	1.00
\$20,000 to \$39,999	0.83 (0.49, 1.40)
\$40,000-\$59,999	0.89 (0.54, 1.46)
\$60,000-\$79,999	1.04 (0.62, 1.75)
$\geq$ \$80,000	1.13 (0.68, 1.87)
<b>Marital Status</b>	
Single/divorced (Ref)	1.00
Married/common-law	1.27 (1.00, 1.60)
<b>Physical Health and Symptoms</b>	
<b>Smoking Status</b>	
Never smoker (Ref)	1.00
Former smoker	1.29 (0.99, 1.67)
Current smoker	1.25 (0.94, 1.66)
<b>Obesity</b>	
BMI < 30 (Ref)	1.00
Obese (BMI = 30–39.9)	$\sim$ 1.03 (0.80, 1.33)
Missing	0.95 (0.48, 1.87)
<b>Insomnia</b>	
No	1.37 (1.08, 1.74)
Yes (Ref)	1.00
<b>Debilitating Pain</b>	
No	1.15 (0.89, 1.49) ( $p = .048$ )
Yes (Ref)	1.00
<b>Difficulty managing household activities</b>	
No	2.53 (1.96, 3.26)
Yes (Ref)	1.00
<b>Self reported Physical Health</b>	
Fair or poor (Ref)	1.00
Good, very good or Excellent	2.31 (1.73, 3.08)
<b>Substance Abuse/Dependence</b>	
No	1.75 (1.38, 2.34)
Yes (Ref)	1.00
<b>Positive Coping Strategies</b>	
<b>Uses Religious Coping</b>	
Yes	1.36 (1.06, 1.75)
No (Ref)	1.00
<b>Physical Activity</b>	
Inactive (Never)	1.00
Weak	0.76 (0.57, 1.01)
Moderate/Excessive	1.14 (0.88, 1.47)
<b>Availability of Confidant</b>	
Yes	3.65 (2.08, 6.40)
No (Ref)	1.00
<b>Mental Health</b>	
<b>Major depressive disorder</b>	
No	1.78 (1.44, 2.20)
Yes (Ref)	1.00
<b>Longest Duration of Anxiety Disorders</b>	
< 1 year (Ref)	1.00

**Table 3 (continued)**

	Fully Adjusted Model
<b>1–1.9 years</b>	1.18 (0.89, 1.57)
<b>2–4.9 years</b>	1.06 (0.80, 1.40)
<b>5–9.9 years</b>	1.03 (0.68, 1.56)
<b>10+ years</b>	0.79 (0.52, 1.19)
<b>Missing Data</b>	0.29 (0.18, 0.45)

whose longest episode of GAD was more than one year, did not differ significantly in the odds of CMH compared to those whose GAD had been of less than one-year duration.

#### 4. Discussion

The findings of this large, nationally representative, population-based study suggest a high degree of recovery among those with a history of Generalized Anxiety Disorders. More than 70% of those with a history of GAD were in remission from the disorder in the year preceding the survey; almost 60% were not only free of GAD in the past year, they also did not have suicidal thoughts, substance dependence, major depressive disorder or bipolar disorder in the past year; and 40% were in a state of complete mental health, in which they were happy and/or satisfied with life, reporting high levels of psychological and social well-being as well as being free of any mental illness in the past year. Even among those whose GAD had a duration of a decade or longer, half had been in remission from GAD for the past year and one-quarter had achieved CMH.

These are very encouraging outcomes for patients, their family members and health professionals serving those with GAD. Among those with a history of GAD, the odds of CMH were higher among women, married and older respondents, those with a confidant, those in good to excellent physical health and individuals who turn to religion or spirituality to cope. Chronic insomnia, difficulties managing household activities and ever having had a major depressive disorder of substance dependence were negatively associated with CMH.

However, it is important to underline that the prevalence of CMH is lower among those with a history of GAD than among their peers who have never had the disorder. This study demonstrates that lifetime GAD is significantly and negatively associated with complete mental health, even when controlling for a variety of factors, including lifetime depression status. While other population-based studies have examined the relationship between depression and complete mental health (Fuller-Thomson et al., 2016; Keyes, 2002), to our knowledge the current study is the first to explore how a lifetime history of GAD is associated with complete mental health.

The inverse relationship between lifetime anxiety and complete mental health was most substantially attenuated when the respondents' history of major depression was taken into account. This finding is consistent with the large body of literature that documents the frequent comorbidity of depression and anxiety disorders (Bryant et al., 2008; Carter et al., 2001; Wittchen, 2002). In fact, it is estimated that more than half of people diagnosed with anxiety or depression are also diagnosed with the other disorder (Hirschfeld, 2001; Zimmerman et al., 2002). Research suggests that comorbid depressive and anxiety disorders are correlated with slower recovery times and increased recurrent episodes (Hirschfeld, 2001).

Physical health related factors and disability also attenuated the relationship between lifetime anxiety and complete mental health, perhaps in part because anxiety disorders can make it difficult to carry out daily household tasks due to impairment from physical and emotional problems (Hoffman et al., 2008; Kroenke et al., 2007). As such, those without disability may experience fewer barriers to engaging fully in life (e.g., visiting friends, participating in hobbies or social activities, working), making them more likely to experience more positive mental

health.

In order to better understand remission, recovery and complete mental among those with a history of anxiety disorders, the second part of the study focused specifically on those with a previous diagnosis of anxiety disorders. Analysis of these individuals reveals that having a confidant appears to be the strongest correlate of positive mental health among those with anxiety. The relationship between social support and mental health has been well documented (Cohen and Wills, 1985; Lente et al., 2012). For those with anxiety disorders, the social support that extends from a confidant can foster a sense of belonging and self-worth, as well as increase feelings of security. As such, social support promotes positive mental health by increasing emotional (e.g., positive feelings about life) and social (e.g., feelings of positive contributions to society) well-being. Furthermore, a lack of disability was another strong correlate of complete mental health among those with anxiety disorders. This is most likely explained by the inverse relationship between life satisfaction and disability (Strine et al., 2008) and the fact that people living with disability may be at an increased risk of social isolation, restrictions in daily activities, and/or discrimination. It is likely that social support and lack of disability impact the anxiety-complete mental health association in similar and interrelated ways. That is to say that those who are affected by disability and lack social support may experience even greater barriers to engaging in activities that would increase their emotional and/or social well-being.

Other significant correlates among those with anxiety that are consistent with the literature include good self-rated health, lack of lifetime depression, lack of substance abuse or dependence, religiosity, and lack of insomnia. Further research is warranted whether targeting and treating physical health problems, comorbid depression, substance dependence issues and insomnia may result in greater recovery and complete mental health among those with a history of GAD.

Although female gender was associated with complete mental health among those with anxiety in the fully adjusted logistic regression analysis, another study that looked at the general population did not find these relationships to be significant (Gilmour, 2014; Westerhof and Keyes, 2010). This suggests that gender may be a particularly important predictor of complete mental health among patients with anxiety disorders, and should, thus, be considered by clinicians working with this population.

There are a number of limitations to this study. The “absence of mental illness in the past year” variable included only depressive episode, generalized anxiety disorders, bipolar disorders, alcohol or drug dependence, and suicidal ideation. The CCHS-MH, unfortunately, did not include other important mental illnesses such as schizophrenia and personality disorders, and therefore our definition is less comprehensive than is ideal. These variables were derived from the World Health Organization version of the Composite International Diagnostic Interview (WHO–CIDI). Although our study includes a comprehensive analysis of socio-demographic characteristics, we were unable to include illness characteristics as predictor variables that have been included in other studies on remission from anxiety disorders (Penninx et al., 2011). For instance, data were not available on age of onset, duration, severity of episodes, impairment of functioning, or current/past treatment. Furthermore, since the CCHS-MH is a voluntary response survey, the study is susceptible to non-response bias such that those who are most negatively affected by anxiety disorders or languishing mental health may be less likely to respond to the survey. In addition, the self-reported data used in the CCHS-MH is prone to social desirability bias, especially due to the stigma associated with mental illness. This could lead to participants exaggerating their self-perceived social or emotional well-being. Finally, the nature of cross-sectional studies makes it difficult to draw causal inferences between anxiety and complete mental health. Further research that uses longitudinal data is needed in this area.

The literature on recovery from anxiety disorders indicates that age, gender and comorbidity, have important prognostic implications for

those with anxiety disorders (Penninx et al., 2011; Ramsawh et al., 2009; Yonkers et al., 2003). By understanding what predicts complete mental health among those with a previous diagnosis of anxiety disorders, intervention and treatments can be planned accordingly. The current study suggests that those with a previous diagnosis of anxiety disorder who currently report having a close confidant have higher odds of having complete mental health. As such, interventions that focus on increasing social supports are promising strategies to improve the positive mental health (i.e., greater social and emotional well-being and positive functioning) of those with anxiety disorders. Further attention should also be drawn to how interventions can reduce barriers created by disability for those living with anxiety disorders. This could include working with an occupational therapist or increasing awareness of mental health disability needs among employers.

Another significant implication of this study is the need for mental health clinicians and other professionals who work with people with anxiety disorders to understand recovery from the perspective of a complete health model. Although the prevalence of past-year remission from GAD (72%) is encouragingly high, as is the percentage who are also free for the past year from suicidal thought, depression and other mental illnesses in addition to GAD (58%) it is not enough to aspire for patients to merely be free from clinical diagnoses of anxiety or other mental illness. Additional emphasis should be placed on supporting patients to achieve complete mental health. Focusing only on addressing the mental illness aspect of recovery may not be a sufficient strategy for improving the complete mental health of these individuals.

## 5. Conclusion

More than 70% of those with a history of GAD had been in remission in the preceding year and almost three in every five had been free of all suicidal thoughts, mental illness and substance dependence. However, the percentage in complete mental health is still markedly lower for those with a history of GAD (40%) in comparison to those who never had GAD (76%). Presence of a confidant and lack of disability have the greatest impact on the anxiety-complete mental health relationship both in the general population and among a subsample of those with a previous diagnosis of an anxiety disorder. Embracing a complete mental health model in our understanding of remission and recovery from anxiety disorders requires a focus on interventions that can increase positive mental health (i.e., social and emotional well-being and positive functioning) in addition to addressing clinical symptoms of anxiety.

## Contributors

None

## CRediT authorship contribution statement

**Esme Fuller-Thomson:** Conceptualization, Formal analysis, Funding acquisition, Methodology, Project administration, Validation, Visualization, Writing - original draft, Writing - review & editing.  
**Kandace Ryckman:** Writing - original draft, Writing - review & editing.

## Declaration of Competing Interest

None.

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## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.jad.2019.12.004](https://doi.org/10.1016/j.jad.2019.12.004).

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