

# Employment Status, Anxiety and Depression in a Municipal

## Context

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### **Abstract**

*Objectives:* This study aimed to investigate the prevalence of anxiety and depression by employment status among a sample of the working age population residing in Gävle Municipality in Sweden.

*Methods:* A total of 241 persons completed a self-administered postal questionnaire in the baseline survey of the Gävle Household, Labour Market and Health Outcomes (GHOLDH) survey, which collected information on the employment status and psychological health (anxiety and depression) among persons aged 18-65 years. Descriptive and multivariate analyses were performed.

*Results:* The prevalence and risk of anxiety and depression were high among people who were out of work. In the multiple regression analysis, compared to employed people, those who were not employed had a risk of anxiety of 7.76 (5.97-9.75) and 4.67 (3.60-5.74) for depression.

*Conclusion:* The prevalence of anxiety and depression was higher among those who were out of labour market as compared to those employed. Furthermore, people who were out of work had a higher risk of anxiety and depression. The odds were slightly higher for anxiety than for depression.

### **Keywords**

*Gävle, employment status, anxiety, depression*

## **1. Introduction**

Anxiety and depression are considered leading causes of mental health problems. They are associated with increased risk of morbidity, mortality and poor quality of life (Andrea et al., 2009; Honkonen et al., 2007; Linn et al., 1985; Lorant et al., 2003; Montgomery et al., 1999). In addition, available literature has found anxiety and depression to be common among the working population, especially among unemployed people (Honkonen et al., 2007).

Employment is known as a fundamental component of quality of life, the main source of income for

most people, commonly a major influence on someone's social network and a defining feature of social status. Furthermore, mental disorders are suggested to be a burden because of their high prevalence and chronicity, early age onset and resulting in serious impairments (Honkonen et al., 2007). The cost to employers of mental health disorders, especially depression, is significant in terms of lost workdays and reduced productivity (Lerner et al., 2004).

Studies have found a relationship between employment status, employment conditions, working conditions and depression (Alonso et al., 2004; Clarke et al., 2007; Ferrie et al., 2008; McDaid et al., 2008; Siegrist, 2010; Wang et al., 2014). For instance, a follow-up study that used data from the Whitehall II study revealed that working long hours was a risk factor for development of depressive and anxiety symptoms among women (Virtanen et al., 2011). In addition, the literature suggests that mental disorders such as depression and anxiety are a growing cause of work disability and impaired quality of life even among working-age populations (Virtanen et al., 2011).

Qualitative studies have also shed light on the relationship between employment status and mental health. For instance, a study in Canada found that many workers in non-permanent employment reported work-related stress and poor mental health, while physical health appeared subject to harm over the long-term (Clarke et al., 2007).

The recent economic downturn triggered unemployment in many European countries (Katikireddi et al., 2012), which in turn had impact on population mental health. For instance, a study by Katikireddi et al. (2012) observed that the population-mean mental health deteriorated within two years of the onset of the most recent economic recession. In Sweden, the economic recession also brought economic and labour market fluctuations, with many counties and Municipalities bearing the brunt of high unemployment rates. And within Gävleborg county, Gävle Municipality, the capital of the county had high unemployment rate as compared to the County and national average (Arbetsförmedlingen, 2017). From 2008-2009 to 2010, unemployment in the Municipality rose to 12.9 per cent and at the time of the survey, the average unemployment rate among economically active persons (16-64 years ) was 13.4 per cent (Arbetsförmedlingen, 2017).

To our knowledge, no previous study has addressed the relationship between employment status and anxiety and depression in the region of Gävleborg, and specifically Gävle Municipality. Therefore, this study aimed to investigate the prevalence of anxiety and depression among the labour active population residing within the municipality.

## **2. Method**

### *2.1 Study Area, Survey Design and Data Collection*

The Gävle Household, Labour Dynamic and Health Outcomes (GHOLDH) survey was carried out in Gävle Municipality situated in east central Sweden and the capital of the county of Gävleborg (Länsstyrelsen Gävleborg, 2016). The municipality is situated by the Baltic Sea near the mouth of the river Dalälven. The population of the municipality amounts to 96,170 inhabitants (at the time of the

survey) distributed across 18 localities (Länsstyrelsen Gävleborg, 2016).

The study sample consisted of 241 men and women aged 18-65 years surveyed by postal questionnaire in Wave 1 (baseline survey) of the Gävle Household, Labour Market and Health Outcomes (GHOLDH) survey. The sample selection was made in two stages. In stage 1, the selection drew on Gävle Total Population Register and took into consideration all residents of Gävle who were between 18 and 65 years. The initial sample frame consisted of approximately 60,000 individuals. In the second stage, a random sample of 424 individuals was selected. The sample size took into account important variables such as age, gender and parishes within the municipality. A total of 241 persons answered the postal questionnaire (57 per cent response rate).

The GHOLDH survey was conducted between April and June 2012 in collaboration with Statistics Sweden, which administered the data collection and performed data entry. The survey started with the development of a research protocol and the development and piloting of the questionnaire. After, the questionnaire was tested for user friendliness in a pilot study that included 40 individuals and was subsequently reviewed with the help of the research team at Statistics Sweden. Emphasis was put on confidentiality and participants' rights.

The questionnaire collected demographic information as well as detailed information on employment and working conditions, workplace conditions, income, health (physical and psychological), health behaviour, healthcare use and well-being, and family formation from household members aged 18-65 years.

Ethical permission for the survey was sought and received from the Regional Ethical Committee in Uppsala.

## *2.2 Definition and Measurement of Variables*

### *2.2.1 Dependent Variables*

The dependent variables and main outcomes are self-reported anxiety and depression. In the survey, anxiety and depression were measured using the Hospital Anxiety and Depression Scale (HADS) (Haug et al., 2004). The scale comprises 14 items, 7 on anxiety and 7 on depressive symptoms. High scores correspond to high levels of anxiety (HADS-A) and depressive symptoms (HADS-D). Cronbach's  $\alpha$  was 0.86 for total HADS.

### *2.2.2 Independent Variables*

Employment status was the main independent variable. It was dichotomised as employed and unemployed. Due to the small sample size, it was not possible to make sub-divisions within the employed and the unemployed groups. In the survey, people were asked, "What is your main employment status?" Other independent variables included in the study as controls were age sex, marital status and individual income. Age was defined using of three groups, 18-39; 40-54 and 55-65 years, respectively. Furthermore marital status was dichotomized in married/living with partner and single/widowed.

Income was collected from income and taxation register (relates to 2011) as total individual income and

was dichotomized in two categories: a) 0-299 thousand SEK a year and 300 and more thousand SEK a year.

### 2.3 Statistical Analyses

The survey sampling, data collection and data processing, including the calculation of survey weights, were performed by Statistics Sweden. In addition, separate survey weights were calculated for responding individuals and households, including weights for sampling probabilities as well as calibration weights for non-response rates. In this study, the statistical analyses consisted of a descriptive analysis of means and a multiple regression analysis for adjusted means. The descriptive analyses consisted of calculations of HADS means, with 95% confidence intervals. For the multiple regression, adjusted HADS means were calculated, using a linear mixed model, with dichotomised predictor variables (employment, age group, sex, total individual income, education, social support and marital status) as fixed variables, the household cluster as a random variable and the individual survey weight as a weight variable. The adjusted means estimates were calculated with 95% confidence intervals. Furthermore, statistical diagnostics were carried out and included tests of normality, linearity and homoscedasticity.

We repeated the above-mentioned analysis with HADS as a continuous variable and the results were similar. All analyses were carried out using SAS 13.0 software (SAS Institute, 2013).

### 3. Results

HADS scores for anxiety and depression were associated with employment status, with lower scores among the employed than the unemployed. HADS-A (anxiety) scores were higher among women than men, and inverse pattern was observed for HADS-D (depression) (see Table 1). Across the age groups, HADS-A scores were slightly higher among the age group 40-54 years, with a similar pattern for this group's HADS-D scores. Concerning marital status, single/widowed people had higher HADS-A scores than their married counterparts, and the same pattern was found to a lesser extent for their HADS-D scores. HADS-A scores were also higher for people who had the lowest individual and household income. A similar pattern was found for HADS-D scores, but to a lesser degree than for the HADS-A scores.

**Table 1. HADS\* Scores (Mean and 95% Confidence Interval) According to Various Socio-Demographic Variables, GHOLDH Wave-1, 2012**

Variable	N	HADS-A (95% CI)	N	HADS-D (95% CI)
<b>Employment Status</b>				
Employed	173	4.13 (3.60-4.66)	175	2.70 (2.18-3.22)
Not employed	48	7.76 (5.77-9.75)	48	4.67 (3.60-5.74)
<b>Sex</b>				

Men	114	4.30 (3.56-5.05)	116	3.14 (2.52-3.76)
Women	120	5.79 (4.79-6.79)	120	2.59 (2.59-3.87)
<b>Age</b>				
18-39	64	5.20 (4.20-6.20)	64	3.02 (2.30-3.74)
40-54	76	5.55 (4.41-6.69)	76	4.05 (3.10-5.00)
55-65	94	4.21 (3.27-5.15)	96	2.59 (1.98-3.21)
<b>Marital Status</b>				
Married	195	4.85 (4.13-5.56)	197	3.12 (2.60-3.63)
Single/Widowed	38	5.36 (4.12-6.60)	38	3.23 (2.24-4.23)
<b>Individual income</b>				
0-299 tkr	116	5.86 (4.96-6.77)	115	3.54 (2.92-4.23)
300 tkr or more	119	3.73 (3.10-4.35)	131	2.66 (2.02-3.29)
<b>Education</b>				
Up to High School	127	2.55 (1.24-3.77)	113	3.44 (2.92-4.55)
Post High School	114	1.67 (0.28-2.98)	128	2.60 (2.44-3.98)
<b>Social Support</b>				
Yes	126	3.20 (2.90-3.99)	143	4.80 (3.53-5.26)
No	115	4.15 (3.90-5.97)	98	5.36 (4.10-6.50)

Multiple regression analysis was used to examine possible differences by employment status regarding cases. HADS-A was strongly associated with being unemployed (out of the labour force). Compared with people who reported being employed, the adjusted mean for anxiety cases among the unemployed group was 6.69 (95% CI 5.28-8.10) compared with 4.46 (95% CI 3.28-5.64) for HADS-D.

Controlling for other covariates (age, sex, marital status, education, income and social support) did reduce the statistical significance of being unemployed for both HADS-A and HADS-D. For HADS-A, the odds went from 7.76 (5.77-9.75) to 6.69 (5.28-8.10) (see Table 2) and HADS-D from 4.67 (3.60-5.74) to 4.46 (3.28-5.64) (see Table 3). However, in both cases, the means scores remained statistically significant.

**Table 2. Multiple Regression for HADS-Anxiety Scores, GHOLDH Survey Wave-1, 2012**

Variable	Unadjusted HADS-A mean scores with 95% CI	Adjusted HADS-A mean scores with 95% CI	p-value
<b>Employment Status</b>			<0.0001
Employed	4.13 (3.60-4.66)	4.01 (2.79-5.23)	
Not employed	<b>7.76 (5.77-9.75) (p&gt;0.001)</b>	<b>6.69 (5.28-8.10)</b>	
<b>Sex</b>			0.00054

Male	4.72 (3.46-5.98)	
Female	5.98 (4.79-7.18)	
<b>Age group</b>		0.0963
18-39	5.22 (3.81-6.63)	
40-54	6.11 (4.73-7.48)	
55-65	4.73 (3.41-6.05)	
<b>Marital Status</b>		0.5996
Married/Living with partner	5.17 (4.03-6.32)	
Single/Widowed	5.53 (4.04-7.02)	
<b>Education</b>		0.6582
Up to High School	5.23 (4.05-6.42)	
Post High School	5.47 (4.12-6.82)	
<b>Income</b>		<0.0001
0-299 Tkr	6.00 (4.76-7.23)	
300 and more Tkr	4.71 (3.42-6.00)	
<b>Social Support</b>		<0.0001
Yes	5.08 (3.03-7.14)	
No	5.62 (4.82-6.42)	

**Table 3. Multiple Regression Mean Scores with Confidence Internals for HADS-D, GHOLDH Survey Wave-1, 2012**

Variable	Unadjusted HADS-D mean scores with 95% CI	Adjusted HADS-D mean scores with 95% CI	p-value
<b>Employment Status</b>			<0.0001
Employed	2.70 (2.18-3.22)	2.58 (1.57-3.58)	
Not employed	4.67 (3.60-5.74)	4.46 (3.28-5.64)	
<b>Sex</b>			0.8046
Male		3.47 (2.42-4.52)	
Female		3.57 (2.55-4.58)	
<b>Age group</b>			0.0053
18-39		3.31 (2.15-4.47)	
40-54		4.46 (3.34-5.58)	
55-65		2.78 (1.97-4.40)	
<b>Marital Status</b>			0.2134
Married/Living with partner		3.85 (2.90-4.81)	
Single/Widowed		3.18 (1.97-4.40)	

<b>Education</b>		0.0379
Up to High School	3.98 (3.01-4.95)	
Post High School	3.05 (1.93-4.18)	
<b>Income</b>		<0.0001
0-299 Tkr	3.64 (2.63-4.66)	
300 and more Tkr	3.39 (2.30-4.48)	
<b>Social Support</b>		<0.0001
Yes	3.34 (2.70-4.00)	
No	3.70 (2.00-5.43)	

#### 4. Discussion

This study revealed differences in HADS-A and HADS-D scores by employment status. Furthermore, high HADS levels were observed for HADS-A and HADS-D among the unemployed.

The high levels of anxiety observed in the study might be a reflection of feelings of low self-esteem and self-doubt among the unemployed persons. In addition unemployed respondents had high levels of depression, potentially due to perceived helplessness and lack of control to retain their work during the economically difficult times leading to depression. Some argue that unemployment is psychologically destructive because it deprives a person not only of income (which is visible) but of valued, but unobserved, by-products of employment including a structured day, shared experiences and status within a given society (Haug et al., 2004; Kansas Department of Health and Environment, 2011; Stankunas et al., 2006). Our findings indicated an increased likelihood of anxiety and depression among unemployed persons with minimal income (obtained through potential unemployment benefits). Other studies have demonstrated a relationship between employment status and anxiety and depression (Kansas Department of Health and Environment, 2011; Stankunas et al., 2006). For instance, Stankunas et al. (2006) reported that depression is a severe problem among individuals who are unemployed, especially among those who have been unemployed over the long term. In the United States, Bureau of Health Promotion in Kansas reported that the prevalence of anxiety and depression was higher among individuals who were unemployed or unable to work than among individuals who are employed. The same study also found a high prevalence of anxiety and depression among the divorced, separated or never married (Kansas Department of Health and Environment, 2011).

Research by Jang et al. (2009) indicated that employment status was associated with fewer depressive symptoms among middle-aged men than among older men. Also the same study observed that unemployment was associated with more depressive symptoms among middle-aged women than among older women (Jang et al., 2009).

Adjusting for potential explanatory variables (sex, age, marital status, education and income) partly explained the differences by employment status, suggesting that other variables such as personality might be at play. Bjelland and colleagues (2008) found a relationship between a low educational level

and the level of the symptoms of anxiety and depression. In their study, the coefficients decreased with increased age. In addition, a higher educational level seemed to have a protective effect against anxiety and depression, which is accumulated throughout life (Bjelland et al., 2008). In another study, Murcia et al. (2011) reported a high prevalence of depressive symptoms among low-education employees and blue-collar workers. However, the statistical significance disappeared after controlling for classical risk factors for mental disorders (marital status, social support, life events and family history of depression). Ansseau and colleagues (2008) found that the risk factors are similar for anxiety and depression. This finding was in contrast with the observations of Kessler (2002), who suggested that socio-economic status is strongly related to major depression and less strongly related to general anxiety disorder. Other researchers have argued that the process linking SES and depression is divided broadly into two groups: stress and strain (Hunt et al., 2002; Lomas, 1998). The stress theory postulates that personal resources, such as coping style, self-esteem, mastery and locus of control, buffer the impact of stress on depression and that higher-SES individuals are better endowed with such resources (Lomas, 1998). Furthermore, the strain theory addresses the impact of community features such as values, social welfare, social cohesion, infrastructure and public health policy (Robert & House, 2003, p. 29). However, other studies have found conflicting results regarding evidence on contextual effects on mental disorders (Driessen et al., 1998).

Longitudinal studies have reported a relationship between socio-economic status and depression. There are suggestions that the association can represent either an influence of SES on depression to the extent that the greater the prevalence of adversity and stress in lower social strata fosters psychopathology, or an opposite influence to the extent that depressive illness leads to downward mobility or impairs upward mobility (Muntaner et al., 2004; Murali & Oyebode, 2004; Turner et al., 1995). It has been argued that the relationship between employment and good health appears to be bi-directional, at least in some cases, with health influencing employment (the healthy worker effect) and employment influencing health, with employment improving health and unemployment decreasing health (Muntaner et al., 2004). Although poor health may continue to be a barrier to employment, employment may also be a way to better health.

In relation to employment status, which is the measure of SES used in this study, some authors have argued that for men, unemployment and retirement are linked to poor mental health (Artazcoz et al., 2004; Clark, 2003). Furthermore, it has been suggested that while the high incidence of depression among unemployed or retired men may be partly related to a loss of income, other “non-pecuniary” costs that result from loss of employment have been found to be much more substantial (Jang et al., 2009) because of the role of work in acting as a provider of social relationships as well as contributing to an identity in society and individual self-esteem. However, other studies have suggested a less clear relationship between employment status and mental health in women. Liena-Nozal (2009) reported that employment is critical to men’s mental health but is less important for women’s mental health.

In this study, we found that people with no social support had high regression coefficients for anxiety



and depression compared with individuals who were perceived to have social support. These results are in line with previous findings indicating that supportive relationships protect vulnerable women from depression (Murali & Oyeboode, 2004). Furthermore, it has been argued that the effects of poverty are substantially reduced when the degree of isolation from friends and family is controlled for, suggesting that social isolation mediates the relationship between economic status and mood disorders (Jang et al., 2009; Murali & Oyeboode, 2004). We can speculate that being out of paid employment in Gävle Municipality and isolated from friends and family might constitute a risk for being anxious and depressed.

This study was carried out in a municipality, which is still struggling to recover from the consequences of the most recent economic recession. Therefore, it can provide lessons to similar internationally contexts regarding the possible impact of massive job loss on mental health outcomes, especially anxiety and depression. In Sweden and in Europe, in particular, more research is needed that can address trends of mental health before and after economic recessions, and their association with overall health outcomes nationally, but also across counties and municipalities. This could provide policy makers with insights of how to reduce employment-related inequalities in health.

#### *4.1 Strengths and Limitations of the Study*

This study (as well as the GHOLDH survey) used the Hospital Anxiety and Depression Scale (HADS), which is known to be reliable for the general population as well as to be one of the few instruments that do not discriminate according to gender (Bjelland et al., 2002; Lisspers et al., 1997). However, the study has limitations. The analyses were based on a small sample; thus, it was not possible to make subdivisions among the employed and unemployed. Furthermore, although the GHOLDH survey (a household panel survey) is longitudinal in nature, its Wave 1 collected cross-sectional data (with self-reported information), which makes it impossible to explore potential causal links. This question of causality will be answered when the follow-up waves.

Also because of the non-response, it is possible that the non-responders had a high prevalence of anxiety and depression. In some studies, non-responders to surveys have been found to have a high prevalence of mental disorders (Haug et al., 2004). Finally, in the multiple regression analysis, the other covariates explained only part of the observed differences in anxiety and depression; thus, other factors that were not possible to include (for example, length of unemployment) might be at work.

#### *4.2 Conclusion*

The results of this study indicate that the prevalence of anxiety and depression was high among people who were outside the labour market as compared to their employed counterparts. In addition the odds ratios for anxiety were higher among people out of the labour market.

A similar pattern was shown for depression, but to a lesser extent. The findings indicate the need for early detection and potential treatment of people out of the labour force. For instance, general practitioners in the municipality need to be aware of the increased risk of anxiety and depressive symptoms and disorders among unemployed individuals.

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