THE PRESENT GLOBAL FINANCIAL AND ECONOMIC CRISIS POSES AN ADDITIONAL RISK FACTOR FOR MENTAL HEALTH PROBLEMS ON THE EMPLOYEES

**Bojana Avguštin Avčin, Andrea Užmah Kučina, Brigita Novak Šarotar,
Mirjana Radovanović & Blanka Kores Plesničar**

University Psychiatric Hospital Ljubljana, Slovenia

SUMMARY

Background: The global financial and economic crisis starting in 2007 led to a deterioration of several socio-economic determinants of mental health. The aim of this cross-sectional study was to examine the impact of the present economic crisis on the depression and anxiety levels of the employed in the private and public sector in Slovenia.

Subjects and methods: Altogether 1592 employees completed an internet based self-reported questionnaire. Data about perceived impact of the economic crisis, several socio-demographic, socioeconomic, and health parameters were collected. Depression symptoms were assessed by the Center for Epidemiological Studies-Depression Scale and anxiety symptoms by the Spielberger State-Inventory. Regression models were used 1) to explore the associations of the economic crisis with the level of depression and anxiety symptoms while controlling for some sociodemographic and work characteristic variables, and 2) to understand the relationship between some potentially important socioeconomic variables and the perception of the economic crisis.

Results: Depressive and anxiety scores were significantly increased among 590 (46.6%) employees being affected by the economic crisis. The level of depressive symptoms was significantly associated with perceived impact by the crisis, recent sick leave, reported injuries sustained at work, benzodiazepine and analgesic use, the lack of emotional support, and trust in crisis telephone lines. The level of anxiety symptoms yielded the robust association with the level of depression symptoms, reported injuries sustained on the way to work and education.

Conclusions: The economic crisis poses an additional risk factor for mental health problems which clinicians should internalize and become more aware of them. Symptoms of depression and anxiety can be masked in high-utilizers of medical care with physical complaints or psychoactive drug use.

Key words: *employees - economic recession - psychological stress - mental health - anxiety - depresion*

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INTRODUCTION

The global financial and economic crisis starting in 2007 led to a deterioration of several socio-economic determinants of mental health (World Health Organization 2009). Some early figures from Latvia in 2008 indicate a 50% increase of first-time diagnoses of certain psychiatric disorders and a rise of suicide by 15% (European Union 2009). Economic downturn triggered by the economic crisis was associated with a significant increase in the risk of depression in the Hong Kong population (Lee et al. 2010). The global economic crisis may have contributed to the increased prevalence of major depressive disorder in the Canadian working population (Wang et al. 2010). The recession weakens protective factors for mental health and it strengthens the risk factors (European Union 2009).

Research findings on the relation between economic trends and mental health have been decidedly mixed and offer only an incomplete understanding of the present economic situation (Catalano 2009, Stuckler et al. 2009, Uutela 2010). Socioeconomic risk factors for depression include financial anxiety due to low income and financial strain (Jenkins et al. 2008, Weich et al. 1998),

unemployment (Weich et al. 1998), work stress (Stansfeld et al. 1999), social isolation (Bruce et al. 1994), and poor housing (Weich et al. 1998). The fear of unemployment has adverse consequences for the mental health of individuals (Burgard et al. 2009).

Slovenia with a population of two million people is a central European country and an European Union (EU) member. Slovenia has suffered a sustained economic decline (Institute of macroeconomic analysis and development 2010, Statistical office of the republic Slovenia 2010). Among the observed consequences of the economic crisis are significantly increased rate of absenteeism (Baric 2010), increased rate of domestic violence (Bozic 2009), increased frequency of criminal behavior (Slovenian press agency 2010), and clinically observed increased alcohol consumption and higher rates of self-destructive behavior.

There is a lack of research on the relationship between the economic changes and mental health of the employees and there is no full consensus on what can be expected. The aim of present cross-sectional study conducted in Slovenia from June to December 2009 was to explore the impact of the present economic crisis on the depression and anxiety levels of the employees.

SUBJECTS AND METHODS

Sample and Data Collection

The sample of convenience was formed using an adjusted snowballing method. The research team utilized personal aquaintances in Finance newspaper, few PR agencies and the union organization of education to convey the information about the survey and the invitation to participate to their client companies, which again were asked to disseminate these to their contacts. The participation had no financial or other gains for anyone involved in the study or the dissemination of its existence.

The invitation included a brief description of the study, the e-mail contacts of the study team, the information about the access to the questionnaire and the disclaimer that the participation was voluntary, all the information was used for research only and there were no negative consequences pending non-participation. Login into the study page was regarded as an informed consent. Participants were not paid for completing the online survey.

IP addresses were authomatically collected by the survey engine and stored in the password protected original database and were not used in any way. The analytical team used a completely anonymized version of dataset for the analyses.

The invitation to fill in the Internet based self-administered questionnaire was accepted by a total of 25 companies, of which 11 were from the private sector. This private/public sector proportion resembles the country wide distribution (The World Bank 2010).

Three financial institutions and five industry companies declined to participate, some of them with primarily low-educated workers, such as a textile company that also had financial difficulties at the time.

The Republic of Slovenia Research and Ethics Committee approved the research protocol on 14.4.2009 (No. 28/04/09).

Measures. Health outcomes

The participants completed a self-administered Internet based questionnaire. The previous studies have shown that the instruments administered via the Internet appear to be reliable, and to be answered in a similar way as via traditional mailed paper questionnaires (Ritter et al 2004). The first part of the questionnaire comprised of the sociodemographic data which included age, gender, and occupational characteristics.

Questions regarding socioeconomic status and social support followed, including a personal monthly income, existence of bank loans, who to turn to when in crisis. Information regarding physical health (visits to GPs, number of days spent on sick-leave), alcohol (frequency of drinking alcoholic beverages), and consumption of various psychotropic drugs, were also collected.

Question "Have you been affected by the present world economic crisis?" was the primary explanatory variable and if answered affirmatively, several possible answers had been offered regarding its impact: by reduction of work time; job insecurity; job loss; reduction of number of employees in ones company; money loss at stock market; salary reduction; company profit reduction; greater work load; feelings of pressure at work, and mobbing.

In the second part of the study, the level of some depression and anxiety symptoms were assessed as the primary outcome measures using two self-rating scales. The Center for Epidemiological Studies-Depression Scale (CES-D) is a standardized tool for measuring symptoms of depression for initial screening of symptoms related to depression or psychological distress (Radloff 1977). Twenty items had three response categories. Possible range of scores is 20 to 60, with the higher scores indicating the presence of more severe symptoms or higher number of symptoms.

For the assessment of the anxiety symptoms in adults, the first set of items from the Spielberger State-Inventory (STAI) scale was used, measuring how the respondent currently feels (Spielberger 1983). The state anxiety (S-Anxiety) refers to the subjective and transitory feelings of tension, nervousness and worry. The S-Anxiety part of STAI consists of 20-items, each measuring a different dimension of the construct. Each item is scored on a 4-point intensity scale, with a total score that ranges from 20 to 80 (higher score indicates more anxiety symptoms or higher intensity of symptoms).

Statistical analysis

For statistical analyses, the SPSS v. 16.0 and Stata 11 were used. After initial exploration of data, the chi-square test was used to explore the departure of observed proportions from the hypothesised ones for the categorical variables. The independent two samples t-test was used to compare the means of a normally distributed continuous variables between subgroups of interest (e.g. with vs. without percieved impact of the economic crisis). Linear regression models were used to explore the associations of the economic crisis with the level of depression and anxity symptoms while controlling for some sociodemographic and work characteristic variables. Logistic regression was used to understand the realationship between the perception of the economic crisis and some socioeconomic variables. Along with the p-values, 95% confidence intervals were reported to convey the level of precision of the estimates. Type II error at $\alpha < 0.01$ was used as a level of significance for the tests and included the correction for the number of the tests. All tests were two-tailed.

RESULTS

Altogether 2364 employees from private companies or public sector entered the survey web page. The responses of 1592 (67.3%) employees who answered the questionnaire partially or completely have been included in the final analysis. A total of 355 male (28%) and 914 female (72%) employees completed the questionnaire, with the average age of 39.2 years (SD±9.3 years). A significant proportion of the employees were single (14.6%), divorced (27.8%), and 53.2% had no children. More than 70% of the study group worked in the white collar sector: 35.7% in the education and research institutions, 14% in the government offices, 9.6% in the health services, 8.7% in the financial institutions and 2.6% in the law institutions, and the police. 6.0% of all employees worked in the industry, 4.8% in the merchant business, 5.6% in the IT industry, 5.6% in the publishing houses, and the rest 7.9% in the pharmaceutical industry, PR business, marketing, art.

Socio-demographic characteristics and working characteristic of the study group are shown in Table 1.

The question: "Have you been affected by the present global financial and economic crisis?" was affirmatively answered by 590 (46.6%) participants of whom 73.0% were female and 27.0% were male. The gender distribution was the same among participants who reported no impact of the crisis. In the private sector, 236 (53.4%) confirmed the impact of the economic crisis, which was robustly higher than in the public sector where 350 (43.0%) of 814 employees were affected. Proportion with the bank loans was robustly higher among those affected by the crisis (65.0% vs 48.4%).

Significantly higher levels in measured symptoms of depression (p<0.001) and anxiety (p=0.008) were observed among the employees affected by the present economic crisis (Figure 1).

Variables with p<0.02 in the bivariate models were included in the saturated model. The detailed results are available as additional material. The saturated models explained 41.0% of variance for the level of depression symptoms and only 17.0% for the level of anxiety symptoms. Alongside perceived level of the present economic crisis impact (ß=4.09; 95% CI:2.60, 5,59; p<0.001), several other measured characteristics were robustly associated with the depression levels: the level of anxiety symptoms (ß=0.95; 95% CI:0.57, 1.33; p<0.001), reported injuries sustained at work (ß=7.83; 95% CI:1.33, 14.33; p=0.018), recent sick leave (ß=7.20; 95% CI:0.38.1 4.02; p=0.038), prescribed antidepressants (ß=11.58; 95% CI:2.90, 20.26; p=0.009), benzodiazepine use (ß=12.79; 95% CI:3.89, 21.68; p=0.005), and analgesic use (ß=4.57; 95% CI:0.41, 8.73; p= 0.031).

The lack of partner's support (ß=-2.02; 95% CI:-3.71, -0.32; p=0.020) and friend's emotional support (ß=-2.47; 95% CI:-4.45,-0.49; p=0.014) as well as trust in crisis telephone lines (ß=-4.00; 95% CI:6.40, -1.60; p=0.001) were significantly associated with the level of depression symptoms.

Table 1. Socio-demographic and working characteristics of the employees

	Male N (%)[*]	Female N (%)[*]
Age (yr ± SD)	39.1±10.1	39.3±8.9
Marital status		
Single	74 (20.8)	109 (11.9)
In relation	54 (15.2)	110 (12.0)
Married	122 (34.4)	295 (32.3)
Divorced	74 (20.8)	277 (30.3)
Widowed	9 (2.5)	43 (4.7)
Cohabiting	20 (5.6)	76 (8.3)
Number of children		
No children	192 (60.2)	416 (50.5)
One child	56 (17.6)	201 (24.4)
Two children	64 (20.1)	173 (21.0)
Three or more children	7 (2.2)	34 (4.1)
Years of education		
Eight years or less (Primary school)	2 (0.6)	3 (0.3)
Ten to Eleven years (Vocational school)	23 (6.5)	43 (4.7)
Twelve years (High school)	83 (23.4)	146 (16.0)
Fourteen years (Some college)	51 (14.3)	199 (21.7)
Sixteen to Eighteen years (University)	152 (42.8)	433 (47.4)
Twenty years (Master of science)	29 (8.2)	69 (2.0)
Twenty two to twenty four years (Doctorate of science)	13 (3.7)	18 (2.0)
Work characteristics		
Private sector	191 (54.4)	160 (45.6)
Public sector	254 (28.0)	635 (72.0)
Permanent job position	311 (88.6)	763 (85.8)
Temporary job position	40 (11.4)	126 (14.2)

[*] Age was measured in years; all others were counts.

The anxiety symptoms level model yielded the robust association with the level of depression symptoms (ß=0.05; 95% CI:0.03, 0.073; p<0.001), reported injuries sustained on the way to work (ß=-1.08; 95% CI:-1.82, -0.34; p=0.004), and education (ß from –3.31 to –2.91; p=0.001).

Percieved level of the impact by the economic crisis was significantly associated with the employees working in the private sector (OR=0.38, CI=0.25-0.56), employees with lower monthly income (OR=0.60, CI=0.50-0.71), those with a bank loans (OR=0.47, CI=0.32-0.69), and stock market losses (OR=146.15,

CI=32.6-654.5). Company profit reductions (OR=153.03, CI=19.28-1212.46), increased work load (OR=350.10, CI=84.98-1442.29), and perceived mobbing at work (OR=33, CI=6.99-155.74) also significantly influenced the perceived affection by the present economic crisis. Older age (p<0.05) was also significantly associated with the perceived affection by the present economic crisis.

The economic crisis perceived impact on mental health according to their work-branch was highest among the employees who worked in the publishing houses and the IT industry followed by the financial institution, the industry and the merchant business, all private sector. Employees working in the public sector reported lower levels of affection by the economic crisis with the highest level of affection reported by employees working in the education and government offices, followed by the health sector. Significantly higher level of affection according to the salary reductions and company profit reductions were reported by the employees working in the private sector. Employees working in the public sector perceived significantly higher affection by the increased work load and mobbing (Table 2).

Table 2. The distribution of the perceived economic crisis consequences by the employment sector

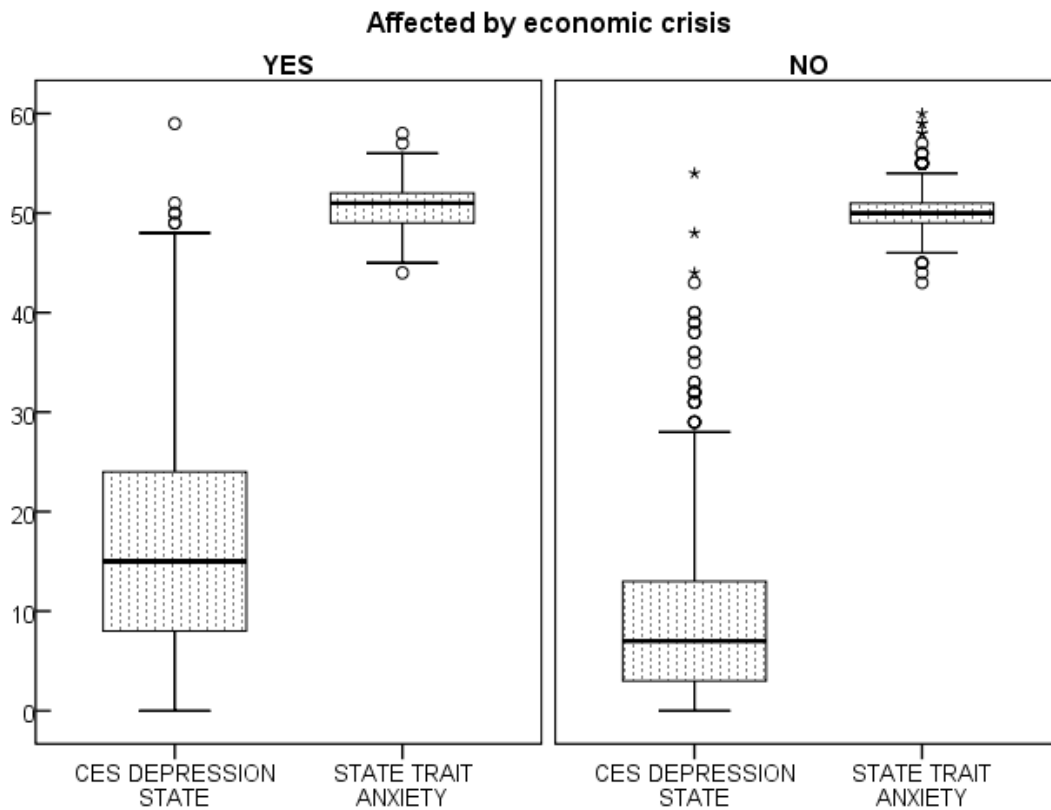|	Sector		Total
	Public N (%)	Private N (%)	N
Increased work load	223 (67·0)	125 (53·2)	346
Salary reduction	148 (44·5)	124 (52·8)	271
Perceived job insecurity	119 (35·7)	96 (40·9)	214
Mobbing	123 (36·9)	37 (15·7)	157
Stock-market losses	61 (18·3)	39 (16·6)	100
Company profit reduction	31 (9·3)	42 (17·9)	72
Work time shortened	5 (1·5)	18 (7·7)	28
Let my employees go	17 (5·1)	12 (5·1)	23
Lost my job	7 (2·1)	11 (4·7)	19

Figure 1. Box plot of depression symptoms (CES-D) and anxiety symptoms levels (STAI) of the employees according to the perceived impact by the present world economic crisis. Upper and lower ends of boxes represent the lower and upper quartiles. Whiskers represent 95th and 5th percentiles. The median is depicted with a solid line near the middle of the box. Outliers and extremes are plotted with a dot and a small circle.

DISCUSSION

The present economic crisis creates risks for the mental health of the world population. Slovenia, an EU member is increasingly affected by the recession (Institute of macroeconomic analysis and development 2010, Statistical office of the republic Slovenia 2010).

Our study has shown that the economic crisis is significantly associated with the rise in the level of depression and anxiety symptoms of the affected employees. The most vulnerable subgroups are employees at risk for income insecurity and poverty; employees working in the private sector, those with lower income, bank loans, and employees who experienced stock-losses and company profit reductions. Perceived affection by the economic crisis is highest in the private sector; publishing houses and the IT industry with significantly higher affection by the salary reductions and company profit reductions in comparison with the public sector which is significantly more affected by the increased work load and mobbing.

Before detailed discussion of these results, several of the more important study limitations merit attention. Limitations with respect to the research design are that our study had a cross sectional design, and the dependent and independent variables were measured at the same time, which prohibits the determination of causality. With respect to the population under study, our study group predominately consisted of higher educated employees. Research suggests that the least well educated workers are at the greatest risk of ill health and many of these are working in sectors such as construction and the textile industry which have been severely affected by the crisis. Other vulnerable groups of the population, such as students and young or unemployed people were also not included in the study. With respect to the sampling approach via the internet questionnaires, some employees were worried that their answers could be controlled and manipulated by their employers. That could have affected their answers. With respect to the assessment of the key covariates of interest, history of depression, anxiety disorder, addiction or any other mental or physical illness and family mental illness have not been assessed. Although the sample was relatively big, it was too small to perform a more detailed exploration of subgroup variations.

Notwithstanding these limitations, the study findings are of interest because contribute to the body of knowledge about the impact of the present global economic and financial crisis on mental health of the employed population in EU countries. To date we were unable to identify any published studies on the topic.

The rise in the level of depression and anxiety symptoms of the affected employees could be explained as the adjustement disorder with feelings of grief and loss, powerlessness to the harmful and multi-channel

impact of the economic crisis such as financial insecurity and dramatic changes in the labor market. Our study has shown that 46.1% of the affected employees reported salary reduction and lower incomes have been shown to be significantly correlated with the economic crisis perceived impact. Beside the salary reduction significantly more affected employees have bank loans and many have already lost important part of their life-time savings through the investements at stock markets or financial funds (Fryer 1992). Financial anxiety accompanied with the ongoing ambiguity about the future and risk of poverty, absolute or relative, presents an important trigger for depression (Uutela 2010, World Health Organization Regional Office for Europe 2010). The changes in the labor market which have increased the perception of increased pressure at work and job insecurity.

Depressive symptoms were significantly associated with the recent sick leave, reported injuries sustained at work, reported analgesic and benzodiazepine use or abuse, and, surprisingly not with the alcohol abuse. The anxiety symptoms level model yielded the robust association with reported injuries sustained on the way to work. In our culture depression and anxiety are often masked and are rather manifested as absenteeism, somatization, hypnotics and/or alcohol abuse and suicidal and other self-destructive behavior which are among the highest in the world (World Health Organization 2010). This has been confirmed by the Predict-D study which has shown surprisingly low prevalence of major depression in Slovenia (Rifel et al 2008, King et al 2008). It is possible that many clinically and subclinically depressed employees are not recognized with depression in primary care (Coyne et al 1995).

The protective factors, partner's and wider emotional and social support are among the most important psychosocial resources needed to cope with the stresses of the economic crisis; the lack of partner and wider emotional support are significant associated with higher depression level. According to our results the crisis telephone lines can offer support and a safe place to talk. This is consistent with current findings that highlight the importance of perceived interpersonal social support in individuals` general mental and physical well-being, both in daily life and upon exposure to negative life events (Moak et al. 2009).

Perceived affection by the economic crisis was highest in the private sector; the private publishing houses and the IT industry followed by the financial institutions and industry. Salary reductions and company profit reductions were the major concern in private sector in comparison with the public sector where higher impact by the increased work load and mobbing were reported by the employees. Our data are consistent with Slovenia Institute of Macroeconomic Analysis and Development report, which predicted that

the crisis hit those employed in the private sector the most (Institute of macroeconomic analysis and development 2010).

Our findings have potential implications for interventions. The economic crisis might pose an additional risk factor for mental health problems which clinicians should internalize and use screening tests. Symptoms of depression and anxiety can be masked in high-utilizers of medical care with physical complaints, reported injuries sustained at work or at the way to work or psychoactive drug use. Crisis lines interventions can offer immediate help to people in emotional crisis. Longitudinal studies about the impact of economic and financial problems on mental health are needed. The findings could help to develop the preventive measures as well as appropriate programs of interventions for the population at risk.

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Authors' contributions:

Study design: Avgustin Avcin, Uzmah Kucina, Novak Sarotar;
Acquisition of data: Avgustin Avcin, Uzmah Kucina, Novak Sarotar;
Analysis and interpretation: Avgustin Avcin, Uzmah Kucina, Radovanovic:
Manuscript preparation: Avgustin Avcin, Uzmah Kucina, Novak Sarotar, Radovanovic, Kores Plesnicar;
Statistical analysis: Radovanovic, Avgustin Avcin.

Correspondence:

Avgustin Avcin Bojana
University Psychiatric Hospital Ljubljana
Zaloska 29, 1000 Ljubljana, Slovenia
E-mail: bojana.avgustin@gmail.com