

# The effect of working conditions on the development of chronic health conditions in Romanian bank employees

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**Abstract.** Objectives: The objective of our study was to analyze the development of chronic health conditions pending employment in a banking environment and exposure to workplace factors such as insufficient lighting, allergens on currency, fast work-pace and others. Materials and Methods: Our study was based on a complex questionnaire evaluating family history, personal history, exposures as well as new diagnoses of cardiovascular, gastrointestinal, endocrine, neurological and immune conditions. The questionnaire was filled out by 349 responders in several districts of Romania. Results: Our results show that the development of cardiovascular conditions or type 2 diabetes was not influenced by workplace factors. Certain factors, such as a fast paced working environment, improper working conditions or poor communication were associated with the development of gastrointestinal, endocrine, neurological and immune conditions. Clear orders and instructions at the work place were negatively associated with the development of endocrine and immune conditions. Conclusion: Our results show that various factors at the workplace are associated with the development of several health conditions such as gastrointestinal, neurological and endocrine complaints, indicating that dialogue and interventions are needed in order to reduce workplace risk and improve employee quality of life and productivity.

**Key Words:** distress, bank, cardiovascular, digestive, working conditions

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## Introduction

Poor employee health and scarce access to healthcare has been associated with a decrease in productivity (Fabius et al 2013; Hilton & Whiteford 2010) and an increased risk of psychological distress (Hilton & Whiteford 2010) related to the workplace. The banking industry is an example of such a high demand, low control employment position (Luiz & Barreto 2012), offering the correct context for the development of distress. This negative form of stress is anecdotally considered to be a trigger for the development or worsening of chronic health conditions. Studies have shown that bank employees have a significant prevalence of various comorbidities such as: minor psychological disorders (Silva & Barreto 2010), musculoskeletal disorders (Oberlinner et al 2015) and cardiovascular conditions (Sarkar et al 1999).

It is, however, unclear whether bank employees as a demographic are more prone to the development of chronic conditions or if workplace factors contributed to the overall poor state of health. The purpose of our study is to find links between workplace factors and the development of novel chronic conditions, while controlling for family or personal history, in a group of bank workers in Romania.

## Materials and Methods

The present study was carried out starting with October 2012 and finalized in February 2013, encompassing several counties of Transylvania, Romania. The study is based on the completion of a questionnaire by responsible, mentally able subjects over 18 years of age. Consent to participate was confirmed personally and implied by completing the questionnaire. The present study does not raise significant ethical issues, as such it was not a subject of discussion for the university ethics board.

The present study is based on a segment of a complex questionnaire, investigating the health, habits and exposures of banking employees.

For the purpose of this study, the responders were asked to note any family history or personal history of several classes of conditions, then to note the development of any further conditions pertaining to those classes, pending employment in a banking institution. Furthermore, the bank employees were questioned with regards to working conditions by questions aimed at:

- 1) Improper working conditions: exposures such as insufficient lighting, noise, electromagnetic radiation, allergens found on currency, air conditioning or others
- 2) Fast work pace

Table 1. Results of analysis regarding the development of cardiovascular conditions related to workplace factors

	Cardiovascular conditions	
	Statistic test used	Results
<b>Improper working environment</b>	Linear-by-Linear Association	P=0.705 for employees with no history P=1.000 for employees with history
<b>Fast-paced work</b>	Mantel-Haenszel Common Odds Ratio Estimate(MHCORE)	OR=1.328( CI 95% 0.646-2.731) P=0.440
<b>Clear instructions</b>	MHCORE	OR=0.742(CI 95% 0.355-1.549) p=0.427
<b>Decision-making</b>	MHCORE	OR=1.066(CI 95% 0.382-2.969) p=0.903
<b>Prolonged mental focus</b>	MHCORE	OR=2.337(0.532-10.264) p=0.261
<b>Communication with hierarchically superior employees</b>	Fisher’s Exact Test	P=0.236 for employees with no history P=0.902 for employees with history

Table 2. Results of analysis regarding the development of Type 2 Diabetes Mellitus related to workplace factors

	Type 2 diabetes	
	Statistic test used	Results
<b>Improper working environment</b>	Fisher’s exact test	P=1.000 for patients with no history Unapplicable for patients with history
<b>Fast-paced work</b>	Fisher’s exact test	Unapplicable
<b>Clear instructions</b>	Fisher’s exact test	P=0.476
<b>Decision-making</b>	Fisher’s exact test	P=0.116
<b>Prolonged mental focus</b>	Fisher’s exact test	P=1.000
<b>Communication with hierarchically superior employees</b>	Fisher’s exact test	P=1.000

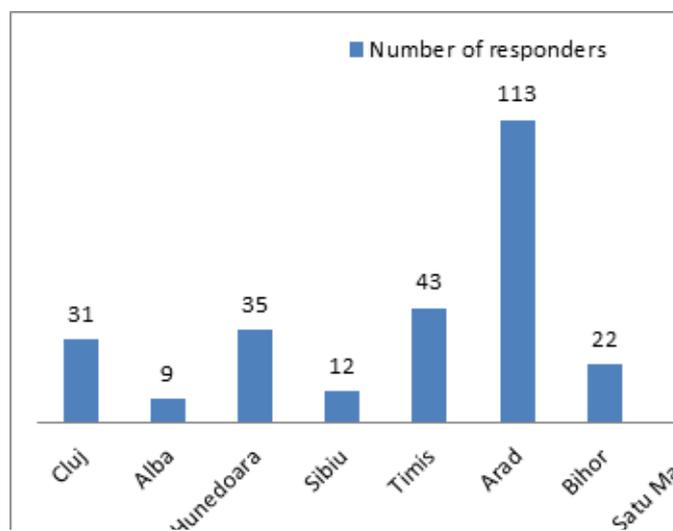


Fig 1. Geographical distribution of responders

- 3) Clear instructions for work tasks
  - 4) Frequent decision making
  - 5) Prolonged periods of mental focus
  - 6) Communication with hierarchically superior officers, rated on a scale of : very good, good, acceptable, mediocre or poor.
- The chronic conditions (or categories) referred to in our study were:

- Cardiovascular conditions
- Type 2 diabetes mellitus
- Gastrointestinal disorders
- Endocrine disorders
- Neurological disorders

•Immune disorders

The questionnaire was completed by employees of several agencies pertaining to two large banking organizations(see distribution in Fig 1), with a total number of 349 responders, above 18 years of age. Filling out the questionnaires implied consent of The questionnaires were completed under surveillance by our investigator inside bank headquarters, in absence of other employees. Questions and unclear aspects were discussed on-site. The data was collected in a Microsoft Office Excel spreadsheet, then analyzed using SPSS 2.0.

For the purpose of this study, we investigated the development of chronic health conditions after employment in a banking environment. For this, the Mantel Haenszel test was used to control for history of chronic health conditions, allowing the adjustment of odds ratio based on prior history. The hypothesis of similarity was tested using Breslow-Day test, followed by stratified analysis using Fisher’s Exact Test or Pearson Chi Square tests.

**Results**

Pending statistical analysis, there were no associations found between the development of cardiovascular conditions and workplace factors in employees with or without personal or family history of cardiovascular disorders. The results of this analysis cluster are found in Table 1.

No associations were found between the development of diabetes mellitus type 2 and workplace factors due to the lack of cases, as seen in Table 2.

A fast paced work rhythm was found to be associated with the development in gastrointestinal conditions (Mantel-Haeszel Common Odds Ratio Estimate, OR=1.842 CI 95% 1.041-3.25

Table 3. Results of analysis regarding the development of gastrointestinal disorders related to workplace factors

	Gastrointestinal Conditions	
	Statistic test used	Results
<b>Improper working environment</b>	Fisher's Exact Test	P=0.179 for responders with no history P=0.063 for responders with history
<b>Fast-paced work</b>	MHCORE	OR=1.842(CI 95% 1.041-3.25) p=0.036
<b>Clear instructions</b>	MHCORE	OR=0.566(CI 95% 0.316-1.012) p=0.297
<b>Decision-making</b>	MHCORE	OR=1.406(CI 95% 0.61-3.238) p=0.424
<b>Prolonged mental focus</b>	MHCORE	OR=1.411(CI 95% 0.58-3.436) p=0.448
<b>Communication with hierarchically superior employees</b>	Fisher's Exact Test	P=0.634 for responders with no history P=0.15 for responders with history

Table 4. Results of analysis regarding the development of endocrine disorders related to workplace factors

	Endocrine Conditions	
	Statistic test used	Results
<b>Improper working environment</b>	Linear-by-Linear Association	P=0.216 for responders with no history P<0.001 for responders with history
<b>Fast-paced work</b>	MHCORE	OR=1.915(CI 95% 0.986-3.717) p=0.055
<b>Clear instructions</b>	MHCORE	OR=0.319(CI 95% 0.153-0.668) p=0.002
<b>Decision-making</b>	MHCORE	OR=1.099(CI 95% 0.455-2.655) p=0.833
<b>Prolonged mental focus</b>	MHCORE	OR=1.472(CI 95% 0.54-4.011) p=0.45
<b>Communication with hierarchically superior employees</b>	Fisher's Exact Test	P=0.712 for responders with no history p=0.016 for responders with history

Table 5. Results of analysis regarding the development of neurological disorders related to workplace factors

	Neurological Conditions	
	Statistic test used	Results
<b>Improper working environment</b>	Fisher's Exact Test	P=0.485 for responders with no history P=0.216 for responders with history
<b>Fast-paced work</b>	MHCORE	OR=1.433(CI 95% 0.73-2.815) p=0.296
<b>Clear instructions</b>	MHCORE	OR=0.297(CI 95% 0.138-0.638) p=0.002
<b>Decision-making</b>	MHCORE	OR=1.459(CI 95% 0.521-4.083) p=0.672
<b>Prolonged mental focus</b>	MHCORE	OR=0.955(CI 95% 0.338-2.698) p=0.931
<b>Communication with hierarchically superior employees</b>	Fisher's Exact Test	P=0.04 for responders with no history p=0.19 for responders with history

Table 6. Results of analysis regarding the development of immune disorders related to workplace factors

	Immune Conditions	
	Statistic test used	Results
<b>Improper working environment</b>	Linear-by-Linear Association	P=0.855 for responders with no history P=0.030 for responders with history
<b>Fast-paced work</b>	MHCORE	OR=1.675(CI 95% 0.626-4.476) p=0.304
<b>Clear instructions</b>	MHCORE	OR=0.532(CI 95% 0.192-1.478) p=0.226
<b>Decision-making</b>	MHCORE	OR=0.546(CI 95% 0.182-1.638) p=0.28
<b>Prolonged mental focus</b>	MHCORE	OR=0.891(CI 95% 0.242-3.28) p=0.862
<b>Communication with hierarchically superior employees</b>	Fisher's Exact Test	P=0.505 for responders with no history p=0.186 for responders with history

$p=0.036$ ). Other workplace factors were not associated with the development of gastrointestinal conditions, as seen in Table 3. Improper workplace conditions were associated with the development of endocrine disorders in responders with history of endocrine disorders. Clear instructions were negatively associated with the development of endocrine disorders in our entire responder group. Communication with hierarchically superior employees were associated with the development of endocrine conditions in patients with history. The results of this cluster are found in Table 4.

Poor communication with hierarchically superior employees as well as unclear instructions were associated with the development of neurological disorders for responders with no history, respectively for all responders. The other negative results for the development of neurological conditions are found in Table 5. Improper working conditions were associated with the development of immune conditions in patients with history ( $p=0.03$ ). Other factors did not show an association with immune conditions, as seen in Table 6.

## Discussion

Our study shows that the development of certain conditions (gastrointestinal, endocrine or neurological conditions) is associated with workplace factors such as fast-paced work, improper working conditions. Conversely, clear instructions and good communication at the workplace appeared to be protective factors in the development of endocrine or neurological conditions in bank employees.

One of the more interesting aspects raised in this paper is the lack of association between workplace factors and the development of cardiovascular conditions in bank employees. In spite of cardiovascular conditions being highlighted as a prevalent problem in bank employees (Chor 1998; Ganesh & Deivanai 2014), it seems that workplace factors carry no effect on the development of these conditions. A similar situation is seen in the lack of association between type 2 diabetes mellitus and workplace conditions.

Both these chronic condition categories are heavily influenced by lifestyle factors. Bank employees seem to have a lack of helpful coping mechanisms in dealing with job-related distress, with an array of risk factors or risk-inducing behaviors being associated with this employee class (Fonseca et al 1999; Kornitzer et al 1993; Kumar et al 2013).

The strength of our study is represented by the adjustment according to history, in order to account for the development or pre-existence of these chronic health conditions in our group. We expect that more statistically significant results could have been achieved with a larger responder base. In certain situations, tests were not applicable due to the lack of responders reporting a certain condition.

More comprehensive studies derived from the present generalized concept would be useful in clarifying associations, as well as recommending workplace interventions.

The final aim of this endeavor is to open dialogue and offer evidence upon which to build efficient strategies for decreasing the exposure to at-risk working conditions, thus improving employee quality of life, improving workplace productivity and leading to a generally healthier population.

## Conclusion

Workplace factors such as clear instructions, communication or improper working conditions have been associated with the development of gastrointestinal, endocrine, neurological and immune conditions. These factors have not been associated with a development of cardiovascular conditions or type 2 diabetes, in spite of these conditions being frequently reported among bank employees. Further studies are needed to pinpoint specific factors of concern and develop interventions in order to minimize risk and improve productivity and quality of life.

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