Adverse Psychosocial Working Conditions and Poor Quality of Life among Financial Service Employees in Brazil

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Abstract: Adverse Psychosocial Working Conditions and Poor Quality of Life among Financial Service Employees in Brazil: Luiz Sergio SILVA, et al. School of Medicine, Preventive Medicine, Universidade Federal de Minas Gerais, Brazil—Objectives: Workers in the financial services sector are exposed to great stress at work. This study investigates whether exposure to adverse psychosocial work conditions is independently associated with poor health-related physical and mental quality of life among financial services workers. Methods: We studied a nationwide representative sample of 2,054 workers of a large Brazilian state bank in 2008. Adverse psychosocial work conditions were investigated by the Effort-reward imbalance (ERI) scale and the Job content questionnaire (JCQ). Health-related quality of life (HRQL) was assessed using the Medical Outcomes Study Short-Form General Health Survey (SF-12). Poor mental and physical HRQL was defined by the lowest quartiles of the SF-12 final score distributions. Associations were investigated using multiple logistic regression analysis. Results: In the multivariate analysis, exposures to low control and lack of social support at work (JCQ) were associated with poor HRQL in the physical domain. Increasing effort-reward imbalance and overcommitment (ERI), on the other hand, were associated with poor HRQL in the mental domain, with a significant statistical trend. Overcommitment was also associated with poor physical HRQL. Conclusion: The results suggest that exposure to adverse psychosocial work conditions has a negative impact on both domains of HRQL among financial service workers. They also indicate that ERI and DC models capture different aspects of job strain. (J Occup Health 2012; 54: 88–95)

Key words: Adverse psychosocial work conditions, Bank work, Demand-control model, Effort-reward imbalance, Health-related quality of life

Over the past three decades, health researchers have increasingly used different tools to measure health-related quality of life (HRQL), both in the general population and in groups of patients. Health-related quality of life is a multidimensional concept that encompasses health, social, psychological and physical domains. It arose from a desire to expand the scope of the findings from health-related studies. As the general objective of healthcare is to restore and preserve the well-being of individuals, health-related quality of life adds one dimension of utmost importance to epidemiological studies concerning morbidity and mortality.

According to the World Health Organization (WHO), the level of safety and health, socioeconomic development and quality of life and well-being of working people are closely linked. As a consequence, reducing exposure to adverse conditions at work is likely to have a positive and productive impact on the physical and mental health-related quality of life (HRQL) of working populations. For this reason, HRQL has also been used as an outcome in studies of working populations. The Whitehall II Study, for instance, found that employment grade was inversely related to decline in HRQL in a short follow-up period, with lower grades experiencing greater deteriorations than higher grades.

The influence of adverse psychosocial working conditions on health is widely known and debated. Over the past decades, occupational stress and health research has been guided by theoretical models, and two of them, the demand-control and the effort-reward imbalance are the most widely used to identify job characteristics that characterize the psychosocial environment at work. Kals compared the two models and found no overlap between them, concluding, as a result, that they represent distinct conceptual and operational approaches.

The number of studies on stress at work and quality
of life is small, but they have consistently reported the association between these two conditions. Tobiasz-Adomczyk et al., Stanfeld, and Lerner, for instance, found significant statistical associations between the exposure to adverse psychosocial work environment, measured by the Demand-Control and the Effort-reward imbalance models, and poor HRQL. A low level of control and high psychological demand (job strain) were associated with a poor HRQL in the mental and physical domains in workers on a production line in Malaysia. A poor general and mental health score was also associated with reduced control and high psychological demand, and with decreased social support at work among nurses at a psychiatric hospital in Taiwan. Statistically significant associations between adverse psychosocial working conditions and poor quality of life were also found among cleaning workers in Las Vegas. Workers who reported a greater effort-reward imbalance were two to five times more likely to have poor physical and general health.

In recent decades, workers in the Brazilian financial services sector have faced radical changes in the occupational environment, which has resulted in significant increases in the prevalence of stress-related morbidities and leaves of absence due to minor psychiatric disorders. A report by the International Labour Organization about the effect of these changes shows that they led to increasing time pressures, excessive work demands, contentious relations with customers, and reported cases of stress and violence among financial service workers.

This study hypothesizes that Brazilian financial service workers who are exposed to adverse psychosocial working conditions (high demand/low control, lack of support at work, presence of effort-reward imbalance and overcommitment) report poorer health related quality of life, both physical and mental, than those who are not exposed.

Materials and Methods

Study population

All employees of a large Brazilian state-owned bank working in various corporate units located in state capitals at the end of 2007 were eligible for this study.

Due to the enormous geographic dispersion and logistical difficulties involved in reaching workers in smaller cities and towns throughout the country, only workers located in the 27 state capitals and the Federal District were included, which reduced the eligible population from 81,867 to 40,005 workers. A random sample totalling 2,500 individuals stratified by gender was selected, with 1,250 male and 1,250 female workers. Data were collected using a self-administered structured questionnaire that was delivered by the postal service to 97% of the sample and by e-mail to 3% between August 28 and December 31, 2008.

Psychosocial work conditions measurements

Psychosocial factors in the work setting were assessed using two instruments: the reduced version of the Job content questionnaire (JCQ) – Demand/Control (DC) model, adapted to and validated for Portuguese by Araújo et al., and the Effort-reward imbalance (ERI) scale developed by Johannes Siegrist, in an adapted and validated Portuguese version.

The first instrument, the JCQ, contains 22 questions with answer options on a Likert scale (1–4), ranging from “strongly disagree” to “strongly agree”. The block regarding social support contains eight questions about relationships with colleagues and bosses. These variables were coded according to the Job content questionnaire User’s Guide. The demand variable was divided into tertiles, with the lowest tertile being the reference category and the second and third tertiles being the intermediary and the highest exposure tertiles, respectively. The control and support variables were also divided into tertiles, with the highest tertile being the reference category and the second and first tertiles being, the intermediary and lowest exposure groups, respectively.

The second instrument, the ERI, consists of three one-dimensional scales: effort (6 items), reward (11 items) and overcommitment (6 items). Based on the theoretical assumptions of the model proposed by Siegrist, an effort-reward imbalance indicator was constructed. The indicator was divided into tertiles, with the first tertile being the reference category and the second and third tertiles being the intermediary and greatest exposure categories, respectively. Overcommitment was also divided into tertiles, with the first being the reference category and the second and third tertiles being the intermediary and most exposed categories, respectively.

The Cronbach’s alpha coefficients for the JCQ scale were 0.80, 0.86 and 0.90 for demand, control and social support at work, respectively. For the ERI scale, they were 0.82, 0.80 and 0.85 for effort, reward and overcommitment, respectively.

Quality of life measurements and outcomes

Quality of life was assessed by the Medical Outcomes Study (MOS) Short-Form General Health Survey (SF-12). The SF-12 was developed as a shorter alternative to the SF-36 for use in large-scale health surveys where application of the longer instrument would be too time-consuming or costly. The SF-12 includes one or two items from each of the
eight domains of the SF-36, as they better predict the Physical Component Summary (PCS) and Mental Component Summary (MCS) measures.\(^{24}\) The SF-12 was translated and adapted to Brazilian Portuguese and validated by Andrade et al.\(^{25}\) The Cronbach’s alpha coefficient for the SF-12 scale was 0.85.

The final score of the scale ranges from zero to one hundred. The higher the score, the better the quality of life is. PCS and MCS measures of the SF-12 were normalized in accordance with the general population of the United States of America in 1990\(^{26}\). Therefore, the mean score and the standard deviation of both the physical and mental component measures presented in this study are related to a mean equal to 50 and a standard deviation equal to 10 in the American population. The final scores for the PCS and MCS domains were dichotomized by the lowest quartile, which was considered to be poor health-related quality of life. A similar approach has been previously used by a study based on the SF-12\(^{11}\).

**Additional variables measurements:**

In addition to the above-mentioned scales, sociodemographic, life habits, health and occupational data were also collected and included as potential confounders in the multivariate analysis.

The sociodemographic variables were gender, age, marital status, schooling, self-declared skin color, having children, owning the property where the individual lives, being the head of the household and residing with unemployed people or with people who did not receive social security benefits. The behavioral variables were smoking, use of alcohol (at least one dose) in the last 14 days and engaged in physical activity in the last 14 days with the goal of improving health or physical conditions. With respect to health, the following data were considered: regular use of medications, reporting of medical diagnosis of any chronic disease (high blood pressure, diabetes, asthma, bronchitis, work-related musculoskeletal disorders) and cardiovascular disease (acute myocardial infarction and/or stroke), hospital admission in the previous 12 months and difficulty falling asleep or returning to sleep if awoken. The psychosocial variables investigated were experiencing stressful situations (mugging, death of loved ones, financial difficulties, hospitalization or illness impairing daily routine, divorce/breakup with a partner, change of address against one’s will) and prejudice related to race, gender, sexual orientation, religion, physical disability, age or socioeconomic condition. The occupational variables were job position and duration of employment at the bank (DC and ERI models).

**Statistical Analysis**

In the analysis, different weights were attributed to men and women with the objective of correcting the difference between the genders in the probability of participating in the study.

The internal consistency of the SF-12, DC and ERI scales were tested by the Cronbach’s alpha coefficient. The analysis was performed using the Stata statistical package, version 9.2 (Stata Corp., College Station, TX, USA).

Workers with poor health-related quality of life in the physical (PSC) and mental (MCS) component of the SF-12 were compared with all the others in relation to exposure to adverse psychosocial working conditions. Because of a skewed distribution, the two domains were divided into quartiles using the lowest quartile to indicate poor health-related quality of life. A similar approach has been previously used by a study based on SF-12\(^{24}\). The magnitude of the statistical association between explanatory variables and poor quality of life was measured by the odds ratio and 95% confidence intervals, obtained by multiple logistic regression.

The analyses of the associations between the categories defined by the JCQ and ERI and poor quality of life were carried out separately for each domain of the SF-12 (PCS and MCS). After an initial univariate analysis of the association between DC and ERI subcategories and HRQL in each domain, multivariate analysis was carried out to adjust for all potential confounding factors, which were statistically associated with poor HRQOL in each domain of the SF-12. Finally, in order to test for a linear trend in the associations between the ERI and DC subscales categories and poor HRQL in each domain, the final scores of these subscales were also entered as continuous variables in the final analysis.

**Human Subjects Protection**

This study was approved by the Research Ethics Committee of the Federal University of Minas Gerais. All participants signed the informed consent form.

**Results**

Out of the 2,500 people selected to participate in the study, 163 were ineligible due to retirement, long-term sick leave, or temporary suspension of their employment contract. Of the 2,337 eligible workers, 2,054 (87.9%) participated in the study.

Among the study participants, there were nearly equal numbers of male and female employees, more were in their forties, nearly half were married, more than two-thirds described themselves as white and nearly 80% possessed a university degree. Most
workers were employed at the bank from 6 to 15 yr, held office or managerial positions and were nonsmokers. The most frequent morbidities were hypertension (27.9%), chronic bronchitis (23.1%) and work-related musculoskeletal disorders (23.0%). Diabetes was reported by 6.3% of the participants (not tabulated).

The final score for the physical component of the SF-12 varied from 20.5 to 64.9, with a median of 50.56. The final score for the mental component varied from 11.0 to 65.5, with a median of 48.43. The chances of reporting poor health-related quality of life were higher for women than for men only in the mental domain ($p<0.01$). In the univariate analyses, poor HRQL was positively associated with high demand, low control and low social support at work (Demand-Control model) and with exposure to higher effort-reward imbalance and to higher degrees of overcommitment at work in the physical (Table 1) and mental domain (Table 2).

Table 3 shows that most of the DC and ERI categories remained statistically associated with a poor HRQL after adjustment for all the confounding factors included in the analysis. Low control at work and lack of social support at work showed rising gradients in the magnitude of the associations with poor HRQL only in the physical domain. A direct association was observed between overcommitment and both poor mental and physical components of quality of life, also displaying a rising gradient in the odds ratios in the physical component. Greater effort-reward imbalance was only associated with a poor quality of life in the mental component, with an increasing trend in the magnitude of the odds ratios. Only the highest exposed category of overcommitment remained statistically associated with poor mental health. All the subscales whose odds ratios presented a dose-response gradient in the multivariate analysis were then entered as continuous variables and showed a highly statistically significant association with poor HRQL, confirming the hypothesis of a significant linear trend in these associations ($p<0.01$).

**Discussion**

We believe that this is the first study to investigate, on a large scale, the health-related quality of life of financial service workers and its relationship with the psychosocial working environment using DC and ERI models. Although the average scores obtained for the components of the SF-12 in this study are low, they are near the normalized values for the general USA population in 1990\textsuperscript{24}. The quality of life scores for the general Brazilian population, measured by the SF-12, are not known.

The results show that the chance of poor HRQL in the physical component is greater among financial service workers exposed to labor conditions featur-
Table 2. Psychosocial work characteristic statistically associated ($p<0.05$) with poor quality of life in the mental domain of the SF-12 (MCS) in the univariate analysis among financial service workers. Brazil, 2008

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Poor MCS (%)</th>
<th>OR$^4$ (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jcq$^1$ model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work demand</td>
<td>Low</td>
<td>20.8</td>
<td>1.00</td>
</tr>
<tr>
<td>Control at work</td>
<td>Medium</td>
<td>25.2</td>
<td>1.30 (1.00–1.68)</td>
</tr>
<tr>
<td>Social support at work</td>
<td>High</td>
<td>28.8</td>
<td>1.59 (1.20–2.05)</td>
</tr>
<tr>
<td>Effort-reward imbalance</td>
<td>Low</td>
<td>15.8</td>
<td>1.00</td>
</tr>
<tr>
<td>Overcommitment</td>
<td>Medium</td>
<td>21.2</td>
<td>1.44 (1.08–1.91)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>36.8</td>
<td>3.07 (2.36–4.00)</td>
</tr>
<tr>
<td>Eri$^2$ model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control at work</td>
<td>High</td>
<td>28.9</td>
<td>1.00</td>
</tr>
<tr>
<td>Social support at work</td>
<td>Medium</td>
<td>26.1</td>
<td>1.32 (1.02–1.71)</td>
</tr>
<tr>
<td>Effort-reward imbalance</td>
<td>Medium</td>
<td>20.2</td>
<td>1.61 (1.26–2.07)</td>
</tr>
<tr>
<td>Overcommitment</td>
<td>Low</td>
<td>20.5</td>
<td>1.61 (1.25–2.07)</td>
</tr>
</tbody>
</table>

$^1$Jcq: Job content questionnaire. $^2$Eri: Effort-reward imbalance. $^3$Mcs: Mental Component Summary. $^4$Or: Odds ratio.

Table 3. Adverse psychosocial factors at work independently associated with poor quality of life in the physical (PCS) and mental (MCS) domains of the SF-12 among financial service workers; Brazil, 2008

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Poor PCS</th>
<th>Poor MCS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OR$^3$ (95% CI)</td>
<td>OR$^3$ (95% CI)</td>
</tr>
<tr>
<td>Dc$^1$ model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control over work</td>
<td>High</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Social support at work</td>
<td>Medium</td>
<td>1.49 (1.07–2.07)</td>
<td>1.05 (0.77–1.43)</td>
</tr>
<tr>
<td>Effort-reward imbalance</td>
<td>Low</td>
<td>2.22 (1.54–3.18)</td>
<td>1.07 (0.75–1.54)</td>
</tr>
<tr>
<td>Overcommitment</td>
<td>Medium</td>
<td>1.37 (0.97–1.95)</td>
<td>0.88 (0.64–1.23)</td>
</tr>
<tr>
<td>Eri$^2$ model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effort-reward imbalance</td>
<td>Low</td>
<td>1.17 (0.83–1.64)</td>
<td>1.49 (1.04–2.13)</td>
</tr>
<tr>
<td>Overcommitment at work</td>
<td>High</td>
<td>1.19 (0.82–1.74)</td>
<td>2.32 (1.58–3.41)</td>
</tr>
</tbody>
</table>

$^1$Dc: Demand and Control. $^2$Eri: Effort-reward imbalance. $^3$Ors for PCS variables were adjusted for age, engagement in physical activity and presence of chronic diseases. $^4$Ors for MCS variables were adjusted for gender, owner of property where the individual lives, being head of the household, engagement in physical activity, use of alcohol beverages (last 12 days), difficulty falling asleep, difficulty returning to sleep after awaking, exposure to stressful situations and experiencing prejudice.
ing low control and low social support at work, with clear dose-response relationships. With regard to the mental component, the results indicate that exposures to greater effort-reward imbalances and overcommitment at work are associated with poor quality of life and that these associations also show clear dose-responses relationships.

There is no consensus regarding the association between a poor HRQL and gender in studies utilizing the SF-12, with results similar to those of this study being found in Stansfeld\textsuperscript{11} and different results being observed by Siegrist\textsuperscript{6}, suggesting that variations in gender may occur in accordance with the time of the study and the population studied. In the present work, this might be explained by the great homogeneity of financial service workers regarding these characteristics. In the company studied, there is an inclusive policy that equates men and women in terms of job categories and incomes. The distributions of men and women in this work are also similar with regard to educational level, marital status and length of employment. For this reason, we did not separate the results by gender in the analysis.

Main Findings

In the present study, the occupational psychosocial factors displayed different behavior in both components of the SF-12. For the physical component, HRQL was positively influenced by the conditions most often related to work organization, such as social support and control. The mental component, in turn, was negatively influenced by the existence of an effort-reward imbalance and by overcommitment. There is a vast amount of literature on the influence of adverse occupational psychosocial factors and their repercussions on the physical and psychological spheres of the workers\textsuperscript{6,10,12}.

It is important to note that the two most important job stress models (DC and ERI) differ in at least two important ways. The DC model puts its explicit focus on task characteristics of the work and on the relationship between coworkers. The ERI model covers a broader range of stressful experience at work, as it includes more distant macroeconomic labor market aspects, such as job security, mobility and salaries, and these occupational rewards reflect the growing importance of fragmented job careers, of job instability, underemployment, redundancy and forced occupational mobility\textsuperscript{27}. The differences between the two models may explain the findings in the present work. However, such associations may also be influenced by the type and diversity of occupational categories studied. Lerner \textit{et al.}\textsuperscript{12}, Tobiasz-Adamczyk \textit{et al.}\textsuperscript{10} and Rusli \textit{et al.}\textsuperscript{13} found negative associations between exposure to high demand and low control at work and poor physical and mental quality of life. Stansfeld\textsuperscript{11} found the same association only for the mental component and for the male gender. Siegrist \textit{et al.}\textsuperscript{6}, Lerner \textit{et al.}\textsuperscript{12} and Tobiasz-Adamczyk \textit{et al.}\textsuperscript{10} found that social support at work positively influenced workers’ quality of life in the physical and mental domains. Achat \textit{et al.}\textsuperscript{28} found a statistically positive relationship between social support and mental quality of life among workers. Watanabe \textit{et al.}\textsuperscript{29} and Tobiasz-Adamczyk \textit{et al.}\textsuperscript{10} found a negative association between physical quality of life and the presence of low control and low social support at work. When present, control at work and social support may function as protectors within the physical component of the SF-12.

Siegrist \textit{et al.}\textsuperscript{6}, Watanabe \textit{et al.}\textsuperscript{29}, Tobiasz-Adamczyk \textit{et al.}\textsuperscript{10}, found strong and direct associations between a poor quality of life (mental component) and increasing effort-reward imbalance and overcommitment, in agreement with the results of the present work.

Study Strengths and Limitations

This study had no intention to explore any specific working situation that might contribute to increase the stress at work. It relies on the two models to characterize the psychosocial working environment. It was conducted on a large sample of financial service workers, with a high participation rate (88%), guaranteeing the external validity of its findings. However, despite existing similarities of working conditions among most financial services places in the country, we cannot extrapolate the study results to workers employed at other companies of the same branch in Brazil.

An important limitation of this study, as well as of any study conducted among active working populations, is related to the healthy-worker effect. Those who were on medical leave or retired prematurely due to health issues did not participate in the study. This would underestimate the quality of life scores found and reduce the strength of the associations with adverse psychosocial working conditions, considering that workers with poor life quality are more likely to be on leave or retired.

In this research, the occupational psychosocial factors were obtained by self-report. Authors such as Stansfeld \textit{et al.}\textsuperscript{31}, Stansfeld\textsuperscript{30}, Niedhammer \textit{et al.}\textsuperscript{31} showed that occupational stress research based on self-reports have a good capacity to predict adverse outcomes, including poor quality of life.

The cross-sectional design of the study does not allow causal inferences regarding the associations between the psychosocial work factors and poor quality of life. It is of note, however, that findings
from prospective studies, such as those conducted by Stansfeld et al.\textsuperscript{11}, Siegrist et al.\textsuperscript{6}, and other cross-sectional studies, such as that by Watanabe et al.\textsuperscript{29}, reinforce the associations observed in the present work.

**Conclusion**

This work showed that financial service workers with a poor health-related quality of life have a greater chance of being exposed to adverse psychosocial working conditions, measured and adjusted as per the variables derived from the Demand-Control and ERI models. These associations remained statistically significant after adjustments for potential confounding factors, presenting, in the pertinent cases, a clear dose-response gradient. Our results reinforce the importance of including health-related quality of life as one more dimension in the study of the relationships between health and work. In addition, the results suggest that adverse psychosocial work conditions may influence both the mental component and physical component of quality of life. Therefore, this association should be investigated in other occupational groups subject to stress in their work environment, especially in longitudinal cohort studies. These findings should also drive financial sector companies to review their current strategies of workplace reforms towards preventing deleterious effects on the physical and mental health of their workers.

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**References**


3) WHO Collaborating Centres in Occupational Health. Declaration on occupational health for all. 11–14 October 1994, Beijing, China.


20) Araújo TM, Karasek R. Validity and reliability of the job content questionnaire in formal and informal jobs in Brazil. SJWEH Suppl 2008; 52–9.