Economics and Human Biology 21 (2016) 90–99

Contents lists available at ScienceDirect

Economics and Human Biology

journal homepage: http://www.elsevier.com/locate/ehb

Biological costs of economic transition: Stress levels during the transition from communism to capitalism in Poland

Anna Lipowicz [a,*], Alicja Szklarska [b], Andrzej W. Mitas [c]

[a] Department of Anthropology, Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland
[b] Unit of Anthropology, Polish Academy of Sciences, Wroclaw, Poland
[c] Faculty of Biomedical Engineering, Department of Informatics and Medical Equipment, Silesian University of Technology, Gliwice, Poland

ARTICLE INFO

Article history:
Received 21 October 2014
Received in revised form 21 December 2015
Accepted 23 December 2015
Available online 6 January 2016

Keywords:
Stress
GDP per Capita
Wages
Inflation
Unemployment

ABSTRACT

At the end of the 1980s, Poland began the transformation from an essentially one-party communist system to a politically pluralistic democratic system. These political and economic changes had major social consequences, among others unemployment and a sharp decrease in real personal income. The aim of the study was to investigate the possible relationship between stress in adult men, measured by the Allostatic Load, and the socio-economic deterioration during the first part of the economic transition. The Allostatic Load included eleven markers assessing adverse nutritional intake, cardiovascular activity, inflammatory processes, and lung, hepatic and renal functions. The results indicate a significantly higher risk of metabolic dysregulation in men examined after 1990, compared to men from previous years. After adjustment for socioeconomic variables and lifestyle variables, men examined in 1991 had a 31% greater risk of higher Allostatic Load compared with men examined in 1985 (OR = 1.31; $p = 0.0541$), in 1992, this risk was 50% greater (OR = 1.50; $p < 0.01$), and in 1993, the risk was 66% greater (OR = 1.66; $p < 0.05$). The conclusion is drawn that significantly more stressogenic factors for men were those directly connected with the financial situation of their families, than a sudden but short increase of prices for goods and services.

1. Introduction

Stress is a factor constantly appearing in daily life and experienced by all people. Although the definition of "stress" is ambiguous, it is commonly used in psychological, medical and biological sciences. It can be defined in a variety of ways, as a stimulus, a response or the interaction between a person and the environment (Cohen, 2000).

Stress is frequently seen as a significant contributor to many diseases; it is a leading cause of obesity and diabetes mellitus type 2, causes immune dysfunction, hypertension, lipid imbalance and atherosclerosis and deteriorates cognitive functioning (Brindley and Rolland, 1989; McEwen and Stellar, 1993; Eskandari et al., 2007). The concept of allostasis (the body's ability to physiologically adapt to match external demands) and allostatic load (AL; a cumulative measure of physiological dysregulation across multiple systems) was introduced (Sterling and Eyer, 1988; McEwen and Stellar, 1993) in order to explain the relationship between chronic stress and poor health. Accordingly, the operation of the stressor upsets the equilibrium of the organism, evokes the stimulation of both the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic adrenomedullary (SAM) system. In consequence, the process of adaptation begins, the body is forced to restore the balance. If the stress is too severe or

* Corresponding author.
E-mail address: anna.lipowicz@up.wroc.pl (A. Lipowicz).

http://dx.doi.org/10.1016/j.ehb.2015.12.005
1570-677X/

the stress lasts too long, the body's adaptive functions fail, which leads to exhaustion, illness and even death. Growing evidence provides support for the hypothesized role of the AL as a link between life experiences and health outcomes (Karlamangla et al., 2002; Schnorpfeil et al., 2003; Seeman et al., 2004b; Mair et al., 2011). Higher allostatic load scores were associated with poorer cognitive and physical functioning, while predicted larger decrements in cognitive and physical functioning, as well as being associated with an increased risk for the incidence of cardiovascular disease, independent of sociodemographic and health status risk factors (Seeman et al., 1997). Also, AL predicted mortality as well as the risk for incident cardiovascular disease (CVD) over 2.5 and 7-year follow-ups (Seeman et al., 2001).

For humans, most often psychosocial factors connected with simple life events play the role of stressors. Negative psychosocial factors are the threat of job loss, feelings of financial pressure, weak social ties, lack of social support, low autonomy, low sense of control over one's life, etc. (Hemingway and Marmot, 1999).

At the end of the 1980s, Poland and the other countries belonging to the communist bloc began the transformation from an essentially one-party communist system to a politically pluralistic democratic system. These changes were accompanied by a complete rebuilding of the entire economic system. In the first few years of the transformation (1990 and 1991), the abrupt reestablishment of macro-economic equilibrium and the rapid rate of structural changes led to a sharp drop in industrial production and in the Gross National Product (GNP). This dramatic worsening of the state of the economy was reflected in all economic indicators. Industrial sales fell about 25% in 1990, and a further 12% in 1991. GNP fell 11% in 1990, and 8% in 1991, before finally reaching a level comparable to that attained during the martial law period of the early 1980s. Inflation increased from 60% in 1988, to 251% in 1989 and 585% in 1990 (Statistical Yearbooks of Poland, 1984–1994).

These drastic political and economic changes had major social consequences. In the first years of the transformation, the most serious problems associated with the worsening state of the economy were unemployment and a sharp decrease in real personal income. In only one year, the purchasing power of the average net monthly wage fell to a level seen at the beginning of the 1980s.

Unemployment was one of the most significant social consequences of the political and economic transformation. The unemployment rate of able-bodied Poles climbed from 0.3% in January 1990, to 5.0% in September 1990, and continued to climb steadily until reaching 16.4% in December 1993 (Statistical Yearbooks of Poland, 1984–1994). From 1989 to 1993, almost 20% of Polish families were hit hard by unemployment and a drop in real personal income, while a large part of society was impoverished.

During the economic transition, the increase of unemployment rates and the drop in earnings were accompanied by a sharp polarization of the socio-economic situation in the Polish population (Domański, 2003). Large social groups of the unemployed appeared, the farming-working population (supported by work on their own farms and earning an income from work outside agriculture) practically vanished, the industrial working class was dwindling down. New groups gained importance. The massive expansion of the class responsible for small and mid-sized enterprises started. It is assumed that the number of small business owners increased from 2% to 9% (Domański, 2003).

One of important consequences of political and economic changes in Poland was the breakdown in basic health services (Adeyi et al., 1997). Public health expenditure fell, work on health reform and general health insurance had only just started. The political and economic transformation vividly showed all negative aspects of the system in the functioning of the public health services. The limitation of the availability of health benefits and the common illegal practice of forcing individuals to participate in financing of treatment caused widespread discontent from patients and a poor assessment of health services (Bakken et al., 1999).

Rising food prices and financial problems affecting most households led to significant changes in the quality and quantity of food consumed, and altered dietary patterns of all social groups which could have a significant impact on their health. In Poland, among the residents of the Lubelskie Voivodeship that took part in research in 1994, 62% of the respondents claimed that during the last 5 years they chose cheaper products, 50% said that they bought less food, and 36% bought food products of lesser quality (Bakken et al., 1999).

Not without reason, the first years of economic transition, with all social and economic consequences, were called "the shock period", and were a time of chronic stress for Polish citizens, characterized by lower health self-assessment (Wróblewska, 2002). Absenteeism from work due to illness rose from 5.91 days per employee in 1989 to 7.86 days in 1994 (WHO Regional Office for Europe, 2002). In 3 years life expectancy at birth shortened from 71.4 years in 1988 to 70.69 years in 1991 (WHO Regional Office for Europe, 2002). The risk of hypertension, hyperglycemia and cancer incidence, rates of cardiovascular deaths and suicides increased (Statistical Yearbooks of Poland, 1984–1994; Petersen et al., 2005; Tukiendorf, 2005; Lipowicz, 2007, 2009; Kozieł et al., 2004, 2010). The number of people with depression or other mental problems grew from 335 per 100,000 in 1989, to 414 in 1994 (WHO Regional Office for Europe, 2002). Age-standardized death rates for mental disorders and disease of the nervous system and the sense organ for males rose from 14.39 per 100,000 in 1988 to 18.75 in 1991 and 1992 (European Health for All Database, WHO 2014). Additionally, a slowdown in the trend toward increasing height among 19-year-olds, and in the rate of development and maturation among children and adolescents was observed (Lipowicz, 1999; Kołodziej et al., 2015). Birth parameters also worsened (Kryst, 2014), and the level of malnutrition increased among children and adolescents (Jarosz et al., 2006).

The aim of the cross-sectional study was to compare level of stress measured by physiological dysregulation (expressed in Allostatic Load), in a male population of