

## CHRONIC FATIGUE SYNDROME – ECONOMIC IMPACT

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### INTRODUCTION

Fatigue is a common complaint in the general and active population with reported prevalence ranging from 7% to 45% (Katz, 2009; Bültmann, 2002). Fatigue is a condition that may vary from a mild form that is commonly seen in society to a severe form such as CFS (Chew-Graham, 2011; Peters, 2012). CFS is characterized by persistent, medically unexplained fatigue combined with symptoms such as musculoskeletal pain, sleep disorders, headaches, and disorders of concentration and short-term memory (Moss-Morris, 2015). CFS is a severe health issue (Yancey, 2012).

Due to the aforesaid, a documentary analysis of publications over a 10 years period was carried out (2007-2017). The publications were extracted from the databases MedLine, Embase, PubMed, and searched by keywords: "chronic fatigue syndrome", "economic losses". In order to collect local data in Bulgaria, we conducted a survey and reported absence from work due to chronic fatigue.

### METHODS

The objective of our work is to assess the economic burden and losses in different countries as a result of chronic fatigue syndrome affect in the active population.

The tasks we set were:

To conduct a survey among 100 people to evaluate the impact of chronic fatigue on absences from work; from the results, analysis and comparison, to prepare conclusions and make recommendations for the practice

Research group: documentary analysis of publications over a 10 years period was carried out (2007-2017). The publications were extracted from the databases MedLine, Embase, PubMed, and searched by keywords: "chronic fatigue syndrome", "economic losses". Survey was conducted through <https://www.surveymonkey.com> among 100 Bulgarians at age of between 20-60.

## RESULTS

The chronic fatigue syndrome (CFS) is a condition that is exhausting and costly in terms of health care utilization, and also represents a significant economic burden for patients and their families (Collin, 2011; Assefi, 2011).

The economic impact of the disease is usually evaluated in terms of direct and indirect costs. The first one are representing the direct medical costs, including hospital, ambulatory, recipe drugs, OTC drugs, laboratory test. Indirect costs include transportation, loss of productivity, caregiving services from family members, friends or others. The total annual value of loss of productivity in the United States is \$ 9.1 billion, equivalent to about \$ 20,000 per person affected by CFS.

Study of people with and without fatigue, identifies differences were found in the employment rate, and these data indicate significant declines in employment resulting from CFS in individuals of both genders and across all age groups.

Reported is a 54% decrease in working capacity among people with CFS and 27% reduction in employment due to CFS (total women and men) (Kenneth, 2004; Leonard, 2008).

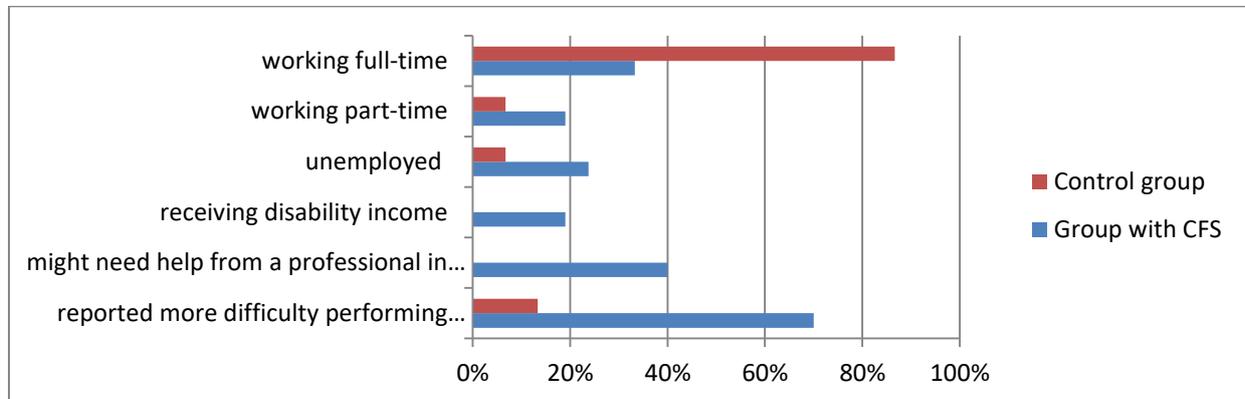
The national losses of USA from CFS are resulting in \$9,1billion comparable to those evaluated for other diseases affecting the digestive system (\$ 8.4 billion), infectious and parasitic diseases (\$ 10.0 billion), compromising immunity (\$ 5.5 billion), disorders of the nervous system (6.4 \$ billion) and skin diseases (\$ 1.3 billion) (Assefi, 2011).

Children may also be severely affected, but those whose symptoms are mild to moderate have a better prognosis than adults. The early onset of CFS significantly reduces the educational opportunities of the individual, which in turn leads to a secondary, indirect effect on income and employment. Taking into account the effect of early onset of CFS on education significantly increases the amount of productivity losses and suggests that a major part of the economic burden of the disease may result from interruption of education or impairment of the individual's ability to learn and memorize (Carruthers, 2011).

The annual estimated loss on individual and nation level in Wichita, Kansas is between 12,000 to \$ 28,000 per individual and \$ 5.5 billion to \$ 12.7 on national level respectively (Reynolds, 2004).

## DISCUSSION

In Illinois, Chicago, these findings indicate that patients, their families, and the community at large have high economic costs associated with CFS. A study evaluated the direct economic impact of the CFS, resulting in average annual value of \$ 2,342 to \$ 8,675 per patient.

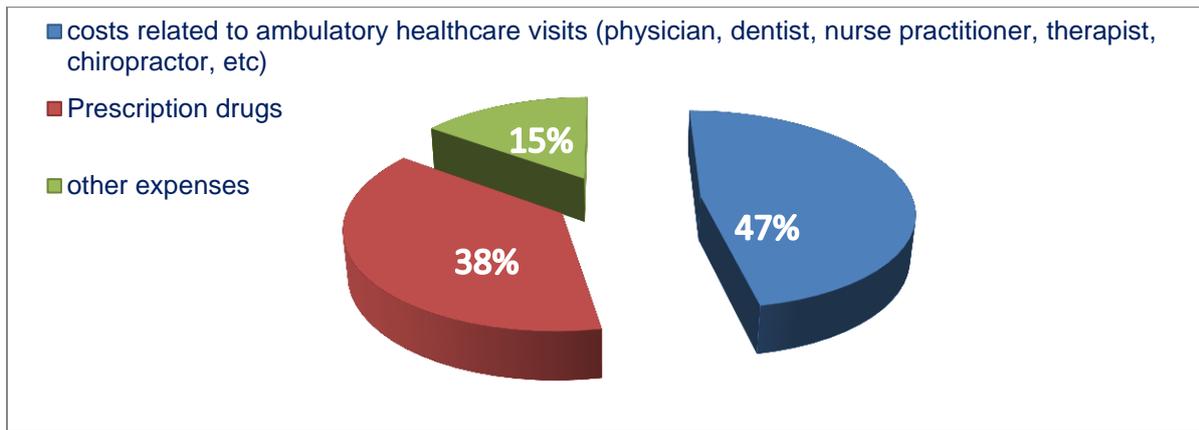


**Diagram 1.** Findings indicate that patients have high economic costs associated with CFS (Illinois, Chicago)

Around 70% of those interviewed with CFS reported more difficulty in work performing or other activities versus the control group (13.3%). Participants with CFS are more likely to need help from a professional to get employment, as opposed to controls (40% vs. 0%). A significantly higher percentage of ME/CFS participants compared to controls receive disability income (19% vs. 0%), are unemployed (23.8% vs. 6.7%), or working a part-time job (19% vs. 6.7%) (Jason, 2008).

Study results in Georgia, USA evaluate the direct and indirect costs of CFS and the impact on educational level. The analyzed cases show that chronic fatigue syndrome can lead to a significant increase in health care costs and a decrease in individual income. Studies show that up to 2.5% of the elderly population can suffer from CFS. In Georgia, with about 5.5 million people between the ages of 18 and 59, the disease could amount to \$ 452 million of total health care costs and \$ 1.2 billion in lost productivity (Lin, 2011).

People affected by CFS have significantly increased medical expenses and reduced incomes compared to those who are not affected with CFS. These economic costs amount to \$ 11,780 a year. Productivity loss represents 82% of the total cost of CFS, with almost half of the productivity loss being due to lower employment rates or inefficient presence.



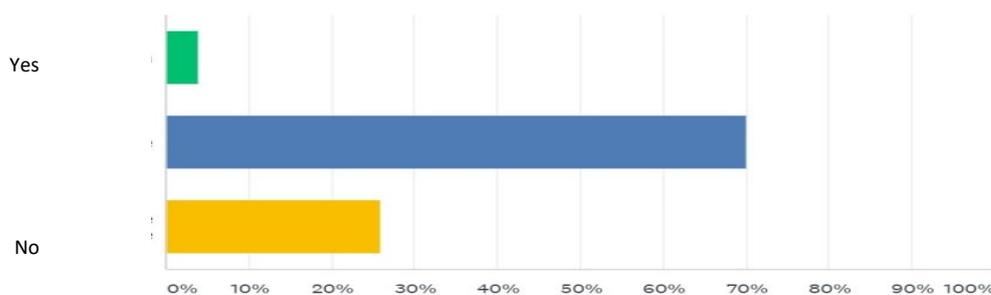
**Diagram 2:** Visualization of the direct medical costs

The direct medical costs related to CFS are \$ 3226 and the indirect costs due to loss of productivity are \$ 8554 (Kenneth, 2004).

**Table 1.** The current employment status that has been registered

"Currently working"	40,7%
"Suspended due to symptoms associated with fatigue"	16,2%
"Terminated permanently due to symptoms associated with fatigue"	34,0%
"Other"	9,1%

Answered: 100 Skipped: 0

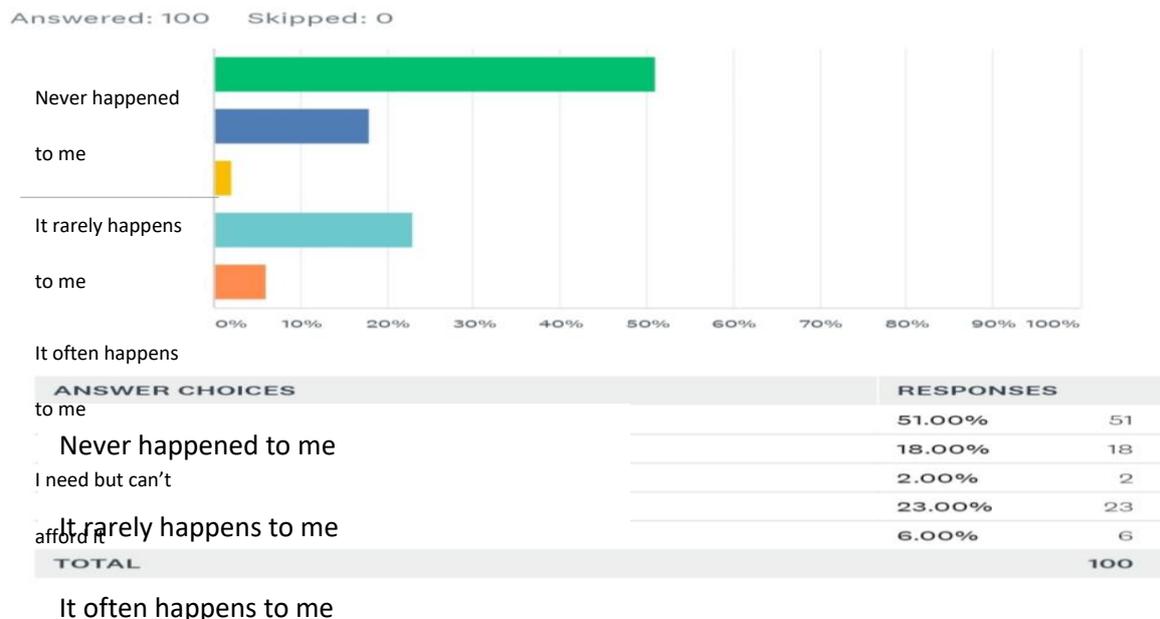


ANSWER CHOICES	RESPONSES
Yes	4.00% 4
Not as far as I know	70.00% 70
No	26.00% 26
<b>TOTAL</b>	<b>100</b>

**Diagram 3:** The costs are at amount of £22,3 million for the affected people

A UK CFS study was conducted on the length of illness of patients without being diagnosed, the duration of unemployment, age, sex and number of

patients, with income and population data provided by Office for National Statistics. The loss of productivity was evaluated in UK. Around 2170 patients were enrolled, of whom 1,669 (76.9%) were women. The mean age of men and women is 41.4 years and 38.6 years, respectively. The current employment status that has been registered is shown in Table 1.



**Diagram 4. The results from first question**

Do you suffer from any of the following diseases and / or addictions: cardiovascular and cerebrovascular disease, serious lung disease, diabetes, neurological diseases, severe disease of liver, kidney and hematopoietic system, thrombocytopenia and impaired blood clotting function, mental illness Alzheimer's disease or cancer, alcohol / drug addiction? The results from first question are displaying (diagram 3) that 4% of the respondents have a disease that could be a cause of chronic fatigue.

**Are you being absent from work due to feeling of intolerable fatigue?**

From the results (diagram 4) we established that 51% of the respondents don't need to be absent from work due to chronic fatigue, 23% can't afford to be absent even they need to. Their work capacity and efficiency in the workplace are certainly limited.

**CONCLUSIONS**

Chronic fatigue, like many other chronic diseases, results in a disability that is associated with financial losses, often greater than the costs associated with treatment. These results show that employers are interested participants in the

search for better diagnosis and appropriate treatment for chronic fatigue. Reduced work capacity is not reflected in salaries, and is often accompanied by work absence and health insurance costs which are covered by the employer.

Based on the review of economic data regarding the economic losses due to CFS in different countries, it can be concluded that chronic fatigue leads to regular absence from work and is associated with significant, national and individual costs. Analyzes and strategies are needed to reduce financial losses and improve patients' quality of life. Improving diagnosis and understanding of "best practices" in primary medical care can lead to better outcomes and savings of health resources.

The value of economic burden of CFS is demonstrating again the necessity of identify the cause of the occurrence as well as the potential therapies to achieve effective control and treatment of the symptoms of CFS. Analyzes and strategies are needed to improve the quality of life of patients and reduce major financial losses for the individual patient and the community.

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