

# Chronic Fatigue Syndrome Prevalence and its Relation to Job Performance among Nurses

## Roozbeh Hospital (a Psychotherapy Center) 2013

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**Abstract** Background and Objectives: Chronic Fatigue Syndrome (CFS) is a severe, debilitating disorder. Permanent chronic fatigue that affects the daily routine activities at least for six months and 4 of the 8 patients reported symptoms associated with this disorder (problems of memory / concentration, restless sleep, joint pain, swollen lymph nodes, muscle pain, headache, sore throat, weakness due to work) and the absence of any underlying disease is the another sign of this disorder. One of the important things that is noticeable about the syndrome, is causing physical and mental disabilities in the person that will lead to approximately 50% reduction in his job performance. Methods: This study has been conducted through self-reported questionnaire and field and library studies. so the desired randomly set of 78 nurses have been selected to answer the two demographic information and symptoms questionnaires CFS (DSQ. revised) which its reliability and validity has been verified. These questionnaires have been adjusted to the patient's preliminary data record and their symptoms. In the second stage, each individual job performance questionnaire was completed by department head. Results: The information obtained from the chronic fatigue syndrome questionnaire shows 14.1% prevalence of CFS. In discussing the relationship between CFS and indicators of job performance, it was cleared that people with the syndrome has lower job performance than those are healthy. Conclusions: In many similar studies, the effects of CFS on overall job performance in subjects were discussed and in most cases have been verified. The only differences are in subdivisions of job performance which are considered in this research

**Keywords** Chronic Fatigue Syndrome, Job Performance, Criteria, Prevalence, Index

## 1. Introduction

Chronic fatigue syndrome is a severe, debilitating disorder in many definitions (Prins et al. 2006; Afari et al. 2003). the most common definition in all researches and also in clinical sections is defined by the Centers for Disease Control and Prevention of America which is also known as (CDC) definition. The main criterion for this definition is persistent and chronic fatigue for at least 6 months or even more which affects the daily routine activities. In addition, the patients must have at least 4 of the 8 specific symptoms of the disorder (problems of memory/ concentration, restless sleep, joint pain, swollen lymph nodes, muscle pain, headache, sore throat, weakness due to work).

There are other definitions for CFS Such as the Oxford definition (Sharp et al. 1991), Canadian definition. (Carruthers et al. 2003), Australian definition (Anderson et al. 1997) None of these definitions deviate significantly from the CDC definition, but there are differences. In particular, the Oxford definition requires the existence of mental fatigue and accepting the signs that may indicate a mental disorder. The Australian definition does not need a new kind of fatigue, while the Canadian definition removes the patients with mental fatigue symptoms.

According to the Fukuda (1994), certain Criteria for CFS Is defined :

A) self-reported persistent or reversible fatigue, which is not because of typical work and does not disappear with the rest and will disrupt in the individual's activities.

B) four or more of the following symptoms (criteria),

- The criterion PEM (Post-Exertional Malaise) or feeling tiredness after routine daily activities such as walking, running, swimming, lifting objects.
- The criterion (Unrefreshing Sleep): not feeling well after waking up from night sleep.

- The criterion (Muscle Aches): to feel pain and stretch in the muscles.
- The criterion (Joint Pain): to feel pain, stiffness and tenderness of the joints without any swelling or redness.
- The criterion (Headaches): headaches with new features, location and different types from common headaches.
- The criterion (Memory / Concentration Problem): problems with memory and concentration.
- The criterion (sore throat): Sore Throat.
- The criterion (Lymph Node Problems): pain and swollen lymph nodes in neck and armpits.

C) Prolonging symptoms and fatigue for 6 months or more  
 D) any other illness (medical or psychological) that causes chronic fatigue is not found. (Wojcik et al. 2011)

From CFS symptoms can refer to the followings: profound fatigue that does not improve with rest and sleep and gets worse by any physical and mental activity. Reduction in physical and mental performance as much as 50% compared to normal, general weakness, muscle pain, lack of mental focus and memory loss, insomnia, chest pain, dizziness, chronic cough, night sweats, weight loss, respiratory problems and some psychological problems such as depression, anger, irritability, anxiety attacks and so on. (CDC<sup>1</sup> 1994)

The best scientific definition of CFS which faced with the most support by the researchers and is currently Known as standard definition; is the one presented by the USA center for disease control (CDC) in 1994. Based on this definition, a clear characteristic of the CFS is fatigue which leads to a significant reduction in the activities of occupational, educational, social and personal (Afari and Buchwald 2003).

The effects of CFS are costly and cause reduction in productivity, efficiency, motivation and increased absenteeism, etc. (Kennedy 2004). The Indicators will be considered for examining the impact of CFS on the performance evaluation including the impact on the performance evaluation criteria such as accuracy, people's public relations, being obedient, efficiency and competency, nursing knowledge and family relationships that ultimately job performance results are the rates of these indicators.

People with CFS, has often lower performance than a normal person. In addition, the common symptoms of this disorder can be named as symptoms such as weakness, muscle pain, memory loss and lack of mental concentration, insomnia, chest pain, dizziness, night sweats, weight loss, and mental health problems including depression, irritability, anxiety and other things. The most common symptom is fatigue, extreme exhaustion which is determined by physical and mental decline and it is a reason of about 50 percent reduction in the infected person's activities. Reasons for the appearing and prevalence of CFS are unknown, but its occurrence is estimated one in every 1,000 people (Sharma et

al. 2010)

The traditional doctor-patient relationship has already been replaced with teamwork. Patient care involves gathering a group of health care professionals in clinics and hospitals and the centers for health care providers. The nurses who coordinate these activities are among different groups in order to ensure that the right person for the management of patients, appropriate treatment and improvement process and the patient's recovery through the optimized ways is selected.

So the nurse by assessing the condition, diagnosis, planning, intervention, monitoring and surveillance begins care proceedings. The indirect nursing care through education and counseling for the patient and his family will be done too. Therefore, it is necessary to consider the highest standards of quality and performance for nurses. (Nursing performance and the factors affecting it is regularly monitored and cared for (Abraham 2002).

However, regarding the job stressors, nursing is at the very high risk of affecting CFS (Wagner et al. 1997). From the researchers' point of view, fatigue is always along with the loss of function in daily activities (Price et al. 1992).

In another study, the patients with chronic fatigue syndrome are more impatient and lethargic than the control group and women suffer more than men from this problem (Taylor et al. 2003).

Jason, Taylor and colleagues (1993) and Jason Wagner and colleagues (1998), reported the minimum prevalence of CFS among a sample of 324 nurses per 100,000 nurses in 1993, and in the subsequent study in America, the prevalence of 1088 per 100,000 nurses was reported.

A similar group found a logical relationship between the symptoms of CFS and the inappropriate physical and social functioning and some sort of general discomfort. As the fatigue increases, poor performance levels of the social, physical and general discomfort increases and as the fatigue decreases, general health improvements is observed (Kara et al. 2008).

## 2. Methods

This library and field study was carried out in two kinds of questionnaires. The chronic fatigue syndrome questionnaire (DSQ .Revised) that the reliability and validity of Its Persian version<sup>2</sup> was confirmed and identifies the symptoms of syndrome and studies the questionnaire of job performance adapted from reference The Occupational Information Network (O \* NET<sup>3</sup>) which checks out the indicators of job performance (Tasks, Knowledge, Skills, Abilities, Work activities and Work styles and overall performance).

The questionnaires of symptoms {CFS (DSQ. revised)} were given to the nurses who were randomly selected in different parts of Hospital .In the pilot study, almost 22% of

<sup>1</sup>Center for Disease Control and Prevention

<sup>2</sup>Investigation of Chronic Fatigue Syndrome Questionnaire Validity & Reliability

<sup>3</sup>The Occupational Information Network

nurses seem to affect CFS.  
 $n_0 = \frac{Z_{1-\alpha/2}^2 P(1-P)}{d^2} = \frac{3.84 \times 0.22 \times 0.78}{0.05^2} \cong 264$  . Total number of nurses

was 104,  $n = \frac{n_0}{1 + \frac{n_0}{N}} = \frac{264}{1 + \frac{264}{104}} \cong 78$  . Therefore 78

nurses were chosen to fill the CFS questionnaire. This questionnaire has been arranged to record preliminary information and individual's symptoms. After conforming the personal characteristics, the job performance questionnaire was given to the heads so that to score to the performance indicators of the nurses in the related field.

### 3. Results

In the first part, each performance indicators status according to the criteria which are categorized in the form of three status as weak, average and high and are also examined based on the health status (healthy and patients with CFS). In the second part (two latter columns per table) by using Fisher's exact test, the relationship between health statuses with the indicators of the desired performance is studied. The Table 1 contains the mentioned information for each performance indicators.

The Table 2 represents the differences between the overall performance (the functionality intended for the nurses by the Head section) and the equivalent performance (the performance obtained from the statistical work on slight performance indicators). It is necessary to explain, the variables in equivalent performance has not been raised in the questionnaire and in fact it is an equivalent to the amount of 6 performance indicators which is merely the result of the statistical research in order to compare the score of the overall performance that has been given to the person and it will be used as the work continues.

### 4. Discussion

In the present study, the job performance indicators have been categorized in three categories of weak, average and high that it has been studied in two statuses as healthy subjects and patients with CFS. The above table shows the summarized status of each of the performance indicators and the overall performance based on the health status of individuals.

The following results were obtained from studying the relationship between chronic fatigue syndrome and task performance index: 9.1% are at the weak category of patients with CFS, 81.8% are at the average, 9.1% are at the high category, whereas healthy individuals mainly (91%) are in the high category of the task performance index and they are not statistically significant at weak category. In order to

examine the relationship between chronic fatigue syndrome and awareness performance index, the Fisher exact test was used. According to the results, Pvalue = 0.001 which denotes a significant level of 5%, there is relationship between chronic fatigue syndrome and task performance index.

The following results were obtained from studying the relationship between chronic fatigue syndrome and awareness performance index: 72.7% are at the average, 27.3% are at the high category, whereas healthy individuals mainly (91%) are in the high category of the awareness performance index and they are not statistically significant at weak category. In order to examine the relationship between chronic fatigue syndrome and awareness performance index, the Fisher exact test was used. According to the results, Pvalue = 0.001 which denotes a significant level of 5%, there is relationship between chronic fatigue syndrome and awareness performance index.

The following results were obtained from studying the relationship between chronic fatigue syndrome and the skill performance index; 9.1% of patients with CFS are at weak, 90.9% are at average and 27.3% are at the high category, whereas healthy individuals mainly (88.1%) are at the high skill performance index and they are not statistically significant at the weak category. In order to examine the relationship between chronic fatigue syndrome and the skill performance index, Fisher exact test was used. According to the results; Pvalue = 0.001, that denotes significant level of 5%, there is relationship between chronic fatigue syndrome and the skill performance index.

The following results were obtained from studying the relationship between chronic fatigue syndrome and the ability performance index; 9.1% of patients with CFS are at weak, 81.8% are at average and 90.1% are at the high category, whereas healthy individuals mainly (89.6%) are at the high ability performance index and they are not statistically significant at the weak category. In order to examine the relationship between chronic fatigue syndrome and the ability performance index, Fisher exact test was used. According to the results; Pvalue = 0.001, that denotes significant level of 5%, there is relationship between chronic fatigue syndrome and the ability performance index.

The following results were obtained from the relationship between chronic fatigue syndrome and the working activities index; 18.2% of patients with CFS are at weak, 81.8% are at the average category, while healthy people, mostly (92.5%) are at the category of high level of the working activities index and they are not statistically significant in weak category. In order to examine the relationship between chronic fatigue syndrome and the working activities index, the Fisher exact test was used. According to the results; Pvalue = 0.001 that denotes a significant level of 5%, there is a relationship between chronic fatigue syndrome and the working activities index.

**Table 1.** Performance Index & Health Status

Performance index	Health status	Low		Average		High		Total		Fisher's Exact Test	Exact Sig.
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent		
Tasks	CFS	1	9.1	9	81.8	1	9.1	11	100	32.14	0.001
	Healthy	0	0	6	9	61	91	67	100		
Knowledge	CFS	0	0	8	72.7	3	27.3	11	100	-	0.001
	Healthy	0	0	6	9	61	91	67	100		
Skills	CFS	1	9.1	10	90.9	0	0	11	100	35.92	0.001
	Healthy	0	0	8	11.9	59	88.1	67	100		
Abilities	CFS	1	9.1	9	81.8	1	9.1	11	100	30.47	0.001
	Healthy	0	0	7	10.4	60	89.6	67	100		
Work activities	CFS	2	18.2	9	81.8	0	0	11	100	41.6	0.001
	Healthy	0	0	5	7.5	62	92.5	67	100		
Work styles	CFS	3	27.3	8	72.7	0	0	11	100	44.13	0.001
	Healthy	0	0	4	6	63	94	67	100		

**Table 2.** the differences between the overall performance and the equivalent performance

Performance index	Health status	Low		Average		High		Total		Fisher's Exact Test	Exact Sig.
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent		
Equivalent performance	CFS	4	36.4	7	63.6	0	0	11	100	38.55	0.001
	Healthy	0	0	8	11.9	59	88.1	67	100		
Overall performance	CFS	3	27.3	8	72.7	0	0	11	100	41.08	0.001
	Healthy	1	1.5	4	6	62	92.5	67	100		

The following results were obtained from the relationship between chronic fatigue syndrome and the working styles index; 27.3% of patients with CFS are at weak, 72.7% are at the average category, while healthy people, mostly (94%) are at the category of high level of the working styles index and they are not statistically significant in weak category. In order to examine the relationship between chronic fatigue syndrome and the working styles index, the Fisher exact test was used. According to the results; Pvalue = 0.001 that denotes a significant level of 5%, there is a relationship between chronic fatigue syndrome and the working styles index.

The following results were obtained from the relationship between chronic fatigue syndrome and the equivalent performance index; 36.4% of patients with CFS are at weak, 63.6% are at the average category, while healthy people, mostly (88.1%) are at the category of high level of the equivalent performance index and they are not statistically significant in weak category. In order to examine the relationship between chronic fatigue syndrome and the equivalent performance index, the Fisher exact test was used. According to the results; Pvalue = 0.001 that denotes a significant level of 5%, there is a relationship between chronic fatigue syndrome and the equivalent performance index.

The following results were obtained from studying the

relationship between chronic fatigue syndrome and an overall performance index, 27.3% of patients with CFS are at weak and 72.7% are at average category while healthy subjects mainly (92.5%) are at the high level of the overall performance index and only 1.5% is categorized as weak. In order to investigate the relationship between fatigue syndrome and overall performance index, the Fisher exact test was used. According to the result, Pvalue = 0.001 that denotes a significance level of 5%, there is a relationship between chronic fatigue syndrome and overall performance index.

It is possible to be differences in slight characteristics and other studies which have been pointed out in this research but what is important is the individual's overall performance status from the direct managers and others' point of views that are directly or indirectly in contact with the expected organization or the person.

The indicators are generally considered in Job performance evaluation; including precision, PR, being obedient, efficiency and competency, nursing knowledge and family relationships. Patients with CFS are often with lower level of performance than normal and healthy individuals. Common symptoms of this disorder are fatigue along with severe mental and physical exhaustion and are a factor for reduction about 50% in patient's performance indicators and in all of his activities (Sharma et al. 2010).

Many studies have pointed to the fact of the reduction in the patients' levels of physical activity. (Christley et al. 2012; Burton et al. 2009) However, another factor that contributes to the worsening of the situation is performing activities such as exercises to improve the situation and due to lack of knowledge of how to properly perform; it enhances fatigue or other symptoms in the person.

Chronic fatigue syndrome (CFS) is defined as a disorder along with significant pervasive physical and mental fatigue with no pathological change. In many people with CFS, we can see the reduction of physical activity (Burton et al. 2009).

Patients with CFS often complain about physical activities which increase discomfort and their symptoms and therefore require more time bed rest. It appears that this is due to an incorrect and inappropriate physical activities and the adverse physical condition can be a permanent factor in the CFS. The studies conducted so far on this factor showed no significant results and in some cases, it has been concluded that adverse conditions of the body cannot be a constant factor in CFS (Bazelmans et al. 2001).

## 5. Conclusions

Based on studies done so far, we can conclude that the study of the effective factors (including CFS) on the nurses' job performance and even other critical jobs is very necessary especially in those which job performance, how to interact with job, people involved, organizations and the community is very important. Chronic fatigue syndrome has a considerable impact on job performance, to the extent that many studies has discerned that the loss rate in performance for affected people is 50 % compared to healthy people. This can be due to the factor which is the main reason for this disorder - chronic fatigue - that can effect on the performance indicators from the various aspects. For example, the intensity of the fatigue can affect their accuracy or ability to acquire new skills and training existing skills.

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