

Original Article



Vulnerability to Chronic Fatigue Syndrome: Considering the Role of Personality Traits and Vocational Status

Hooman Darushi¹, Maryam Hosseini², Fatemeh Abazari³, Nader Abazari⁴

¹Department of Pediatric, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran

²Department of Psychology, University of Roudehen, Tehran, Iran

³Department of Psychology, University of Allameh Tabatabayi, Tehran, Iran

⁴Department of Psychology, Shahed University of Tehran, Tehran, Iran

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*Corresponding author:

Maryam Hosseini,

Email: mrymhssini@yahoo.com

Abstract

Introduction: Chronic fatigue syndrome (CFS) is a complex disorder characterized by severe fatigue with no known cause. Any medical condition does not justify chronic fatigue syndrome, and fatigue may be exacerbated by physical, mental, or physical activity but does not improve with rest. This paper provides an account of clarifying vulnerability to chronic fatigue syndrome, considering the role of personality traits and occupational status.

Methods: This was a descriptive-analytical cross-sectional study. The statistical population of this study included police officers, employees of fire departments, and administrative staff. The total number of samples was 273 through a convenience sampling method. The study was conducted in Kermanshah province between December 2019 and April 2020. The NEO questionnaire and the fatigue impact scale were used to evaluate the variables. Also, in order to check possible psychiatric symptoms, SCID-5 was used. The data analysis was performed via T-test and regression using SPSS-22 software.

Results: The results showed that most of the surveyed people were married, in addition, the sampled people in the firefighters group had the lowest level of education, while the administrative staff had the highest level of education. The findings clearly indicated that job differences could not predict chronic fatigue syndrome, while some personality traits did it significantly.

Conclusion: In conclusion findings illustrate that firstly, despite the differences between the vocational status, the effects of cognitive, physical, and social fatigue were observed in all three groups equally. The latter is related to the summary of the fatigue prediction model based on personality traits in which demonstrated that three subscales of personality traits, consisting of neuroticism, openness, and extraversion, significantly predicted the effect of fatigue. By and large, this study has found that in order to prevent vulnerability to chronic fatigue syndrome, changing the job status will not necessarily be fruitful, hereupon, the psychological attempts namely life skills training, time management, targeting skill training, self-expression training and teaching the skill of saying no, according to the needs caused by personality traits may be more profitable.

Keywords: Chronic fatigue, Myalgia, Pain, Psychological distress, Personality

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Introduction

Recent evidence suggests that chronic fatigue syndrome (CFS) is a complicated disorder identified by severe fatigue with no apparent cause.¹ Previous studies of CFS called it “burnout” and indicated that high brain pressure exceeds the limit and stress becomes unhealthy.² The fatigue comes with cognitive impairment and damaged daily functioning that lingers for more than half a year.³ Epidemiologically, it has been proved that these symptoms may appear at

any age,^{3,4} but the probability of its occurrence is relatively higher among females than males, Monden et al.⁵ found that this statement shows the importance of the issue that anyone can suffer from chronic fatigue syndrome. A general report on the epidemiology of CFS in Iran is not available, but Khanopour et al.⁶ reported that the prevalence of this disorder among nurses working in five major cities of Iran is 5.6. Patients with CFS refer to the emergency ward time and again with a set of symptoms



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consisting of pain intolerance, fatigue, post exertional malaise, distress, dizziness and diarrhea.⁶ CFS has myriad overlaps with other disorders,⁷ so that it is sometimes confused with depression.⁸ Therefore, Geraghty et al.⁹ stated that CFS is a clinical condition which can be diagnosed only when other causes of fatigue have been ruled out.

In previous studies of CFS, different variables have been found to be related to formation, exacerbation, and persistence of chronic fatigue symptoms, for instance, in one popular hypothesis, Stevelink et al.² pointed out that too much long-lasting activity leads to the development of symptoms of chronic fatigue, in another theory, Lim et al.⁴ stated that the symptoms of chronic fatigue are caused by a malfunction in the limbic system, so diagnosis and treatment should be done according to the brain functions. On the other hand, it is mentioned in another theory by Monden et al.⁵ that these symptoms are caused by a person's inability to express inner distress, therefore, strengthening psychological skills can prevent the occurrence of CFS.

Although many theories have been proposed about CFS, from viral infections to psychological stress, what is not yet clear is the apparent cause of CFS.^{4,8} The first serious discussion on CFS shows that any medical condition does not justify it, moreover, fatigue perception may be worsened by physical, mental, or physical activity.⁶ A combination of quantitative and qualitative approaches suggests that a complex of factors may cause this syndrome.^{2,3,6} However, Thomas et al.¹ believe that a significant problem with CFS is that it is not relieved by rest, so it is necessary to consider other factors.

Personality traits can affect pain intensity and psychological distress among people at risk of chronic fatigue by influencing stress coping and weakening emotion regulation techniques.⁷ Personality is an almost fixed pattern of how one thinks, feels, and behaves, which makes each person identified as a unique individual.⁸ Personality provides a context in which thoughts, feelings, and behaviors have a specific format; according to a person's personality traits, it can be predicted that a person how a person is likely to react to various events.⁹ The research literature provided a vital opportunity to advance the understanding of personality in association with lifestyle. Thus, personality, in general, can predict the lifestyle of individuals.^{8,10}

From the personality point of view, the less resilient people are, the more severe the pain perception when pain occurs.⁷ The narratives a person reports about the symptoms of chronic fatigue can also affect the severity of the symptoms. Thus, in families with more enmeshed and disturbed family functions, the probability of experiencing symptoms of chronic fatigue increases.⁹ Throughout the research on CFS, personality traits are one of the most critical and effective underlying elements in dealing with stress; personality traits can predict the intensity of stress experienced, depression, mood swings, perceived pain

intensity, and behavioral changes.¹¹ It has been shown by White et al.¹² that personality subscales, including neuroticism and introversion, have the most significant effect on worsening the symptoms of chronic fatigue.

Heretofore, as mentioned by Stevelink et al.² there was a strong belief that people's jobs are the most vital factor in the development of CFS.^{4,7} In general, there is not much agreement about the types of jobs that may cause chronic fatigue, however, jobs that are associated with more uncertainty have attracted the most attention, for example, Geraghty et al.⁹ took account of jobs that do not have a fixed schedule.

Hence, despite the inconsistencies in the reports, there is a significant trend toward changing jobs or stopping work in order to cope with symptoms of chronic fatigue.¹¹ Although it is suggested that it is better to stop working to manage chronic fatigue syndrome, on the other hand, it has been shown that reducing work activities can worsen chronic fatigue symptoms, especially the mood-related symptoms.¹² It is on this basis that some clinicians believe that people with pre-morbid symptoms of chronic fatigue should remain working.^{6,10,11} As a result, there are differences in studies about the effect of various factors on the severity of CFS; for instance, research has shown that occupational status can cause chronic fatigue, while it is observed that in the same situation, many people do not suffer from chronic fatigue.⁴

Therefore, identifying the factors that increase the probability of chronic fatigue is important in several ways: Firstly, if the factors with the highest probability of accuracy are identified, they can implement the prevention process more effectively. Secondly, using etiological findings, less effective recommendations can be discarded, existing treatment methods can be modified, and even newer therapeutic methods can be developed. Accordingly, this paper gives an account of clarifying on vulnerability to chronic fatigue syndrome, considering the role of personality traits and vocational status.

Methods

This study followed a descriptive-analytical cross-sectional design. This study collected data among police officers (criminal department, anti-narcotics police, traffic police), employees of Kermanshah fire departments, and administrative staff of Kermanshah University of Medical Sciences. Samples in this study were selected using the convenience sampling method. The total samples were 273, 98 police officers, 95 university administrative staff, and 80 firefighters in Kermanshah. The data collection was carried out in Kermanshah province between December 2019 and April 2020 by authors Fatemeh Abazari and Maryam Hosseini.

Previous similar studies had determined the sample size from 200 to 300 people, in order to maintain the optimal level for the sample size, an average of 270 people was determined for this research. In order to prevent the loss of samples, it was predicted that 10 more samples

would be taken. For this purpose, before carrying out the evaluation process, explanations were given to the people to justify the importance of the research. Also, in order to control the confounding data, the sample members were randomly selected. It was also predicted that the statistical control method would be used to monitor possible regression confounding factors. The inclusion criteria included: being in the age range of 18 to 45 years, male gender, reading and writing literacy. The exclusion criteria consisted of drug and alcohol use, current use of antidepressants, anti-anxiety and antipsychotic drugs, previous diagnosis of psychotic disorders or detecting clear symptoms based on this hypothesis.

At this stage, firstly, while coordinating and getting approval from the vice chancellor for treatment of the Kermanshah University of Medical Sciences, permission was obtained to enter the relevant centers. The data collection method was that the researcher referred to the designated centers and made the necessary arrangements with the center officials to collect the data. After a structured interview, the researcher presented the confidentiality of the information, and if they agreed to participate in the research, questionnaires were provided to them. In order to comply with the ethical principles, it was explained that participating in the research would not cause personal or financial harm, in case of any possible harm, the main researcher would be responsible. It was also assured that participating in the research or withdrawing from it would cause no special problems in their jobs. Ultimately, subjects answered the questionnaires individually, and the average response time was 45 minutes. The data analysis method was T-analysis for comparison of independent groups and regression, performed using SPSS-22 software. The significant level was set at 0.05.

Theoretically, personality traits are fixed patterns through which a person uniquely thinks, feels, and behaves.¹⁰ Moreover, myalgic encephalomyelitis or chronic fatigue syndrome (ME/CFS) is defined as a complex of serious, long-term illness that affects various body-mind systems.² In order to evaluate personality traits and chronic fatigue syndrome, NEO-FFI five factor personality questionnaire and Fatigue Impact Scale (FIS) were used respectively. Also, in order to check possible psychiatric symptoms, Structured Clinical Interview for DSM-5 (SCID-5) were used.

Tools

NEO-FFI Five Factor Personality Questionnaire

This questionnaire includes 60 questions (R-NEO-PI) and measures five major personality dimensions: psychoticism-emotional stability, extroversion-introversion, receptivity-veiling, being consensual-militancy, and responsibility-irresponsibility. The results of several studies indicate that NEO-FFI subscales have good internal consistency. They reported an alpha coefficient of 68% for agreement and 86% for psychoticism. The NEO-FFI truncated instrument strictly follows its complete NEO-PI form

so that the short form scales correlate over 68% with the complete form version scales of the NEO questionnaire. Another study reported that the validity of the five NEO-FFI factors based on correlation with spouse and peer assessments ranged from 44% and 36% for responsibility to 65% and 48% for acceptance, respectively.¹³

Fatigue Impact Scale (FIS)

This 40-item self-report questionnaire, designed by Fisk et al in 1994, assesses a person's operational limitations over the past month. This instrument contains subscales of the effect of fatigue on cognition (10 items), body (10 items), and community (20 items) are assessed. The validity of confluence of FIS scale with Fatigue severity scale (FSS) and quality of life of SF-36 was obtained by Spearman correlation coefficient test, FIS differential validity of two groups of Mann-Whitney test, reliability between evaluator and re-test of Intraclass correlation coefficient (ICC) and internal compatibility measurement using Cronbach's alpha coefficient. The statistical outcomes showed that the content validity index of the whole scale was 0.85. The FIS scale had convergent validity with SF-36 and FSS. The ICC coefficient of reliability between the tester in each of the physical, cognitive, social, and overall score subgroups was 0.89, 0.86, 0.95, and 0.98, respectively, and the reliability of the retest test was 0.86, 0.78, 0.92, 0.93. Internal consistency of this scale was obtained by Cronbach's alpha coefficient of 0.953.¹⁴

Results

As the results showed, in terms of marital status in all three groups, there were more married people. In terms of education status in the fire department, more people had education below the diploma level, and in the group of police officers and administrative staff group more people with education had education above the diploma. The average age of the fire unit is 39.48 with a standard deviation of 6.44, and the average work experience of these people is 22.61 with a standard deviation of 5.64. In the group of police officers, the average age of people is 36.84 with a standard deviation of 6.72, and the average work experience of this group is 16.80 with a standard deviation of 5.86. The average age of administrative staff is 37.60 with a standard deviation of 9.70, and the average work experience of these was 13 years with a standard deviation of 7.54 (Table 1).

The general results of variance analysis illustrate that despite the job differences between the three groups, the effects of cognitive, physical, and social fatigue were observed in all three groups. The differences in the impact of fatigue in this group are not significantly different from each other (Table 2).

The following are the statistical results related to the summary of the fatigue prediction model based on personality traits. The results reported below, regarding the values of R (0.851), R-squared (0.805) and adjusted R-squared (0.752), confirm the significance of the

Table 1. Demographic information of the research participants

Fire department	Administrative staff	Police officer	Variable	
9 (22.0 %)	6 (7.9 %)	1(1.3%)	Single	Marital status
32(78.0 %)	70 (92.1 %)	76 (98.7%)	Marriage	
0 (0.0%)	1 (1.3%)	51(66.2%)	Under Diploma	Education
5 (12.2%)	22 (28.9%)	17 (22.1%)	Diploma	
36 (87.8%)	53 (69.7%)	9 (9.2%)	Upper diploma	
22.61 (5.64)	13 (7.54)	16.8 (5.86)		Work experience
39.48±6.4	37.60±9.70	36.84±(6.72)		Age

Table 2. Statistical results of analysis of variance of three groups of police, firefighters, and administrative staff to compare the level of fatigue effect

Sig.	F	Mean Square	DF	Sum of Squares	Analysis
0.873	0.133	0.80	2	1.60	Between Groups
		6.00	270	72.00	Within Groups
			272	73.00	Total

relationship between personality traits and symptoms of chronic fatigue in the regression test. (Table 3).

Finally, data analysis showed that the three subscales of personality traits, namely neuroticism, openness, and extraversion, significantly predicted the effect of fatigue among the studied samples. The effect of fatigue among the studied samples according to subscales of consensual personality traits and conscientiousness was not statistically significant (Table 4).

Discussion

Facing the contradictions in the reports about the factors affecting the formation of chronic fatigue symptoms, the aim of the present study was to evaluate the two factors of job status and personality characteristics in predicting the symptoms of chronic fatigue. The main research question was formulated in such a way that of the factors including personality traits and job status can significantly predict the symptoms of chronic fatigue. Therefore, people in three groups, including employees of the police department, employees of the fire department, and administrative employees of the university, were evaluated in terms of their job status and personality characteristics. Accordingly, statistical analysis of the results showed that the hypothesis of the present study is confirmed; so that regardless of various job statuses, differences in personality traits can make employees significantly vulnerable to chronic fatigue syndrome.

There are studies in line with the present research that have placed more emphasis on personal, internal, and personality traits. Cheshire et al.⁶ Geraghty et al.⁹ White and Schweitzer.¹¹ Deary and Chalder¹² have stated that personality traits are more likely than job status to make a person vulnerable to the symptoms of chronic fatigue. In this case, it should be noted that in some studies, the role of situational differences such as job status in the formation and exacerbation of chronic fatigue symptoms has been emphasized. Researches have been reported by Leven et al.¹⁵ Taylor et al.¹⁶ Richman and Jason.¹⁷

Although some researchers like Yin et al.²⁰ Khanpour

et al.⁶ Strassheim et al.²¹ Bartlett et al.²² have, contrary to the results obtained from the present research, emphasized more on external factors such as job status, but the interpretations presented in this field also imply psychological and personality issues. In the meantime, one should not ignore self-management skills because the research shows that individual skills can increase a person's immunity level to prevent chronic fatigue symptoms.¹⁹ Moreover, personality traits can acquire various psychological skills such as problem-solving, time management, flexibility and level of acceptance, negotiation skills, saying no skills, and general skills that affect the individual's quality of life.²⁰ In this regard, the psychological pieces of training for chronic fatigue have been designed from the beginning so that communication and job status are emphasized;^{21,22,23} the main volume of etiological studies on the subject of chronic fatigue symptoms is the evaluation of external variables.^{12,15,17} In this regard, we should note that the emphasis on the effect of job status on the occurrence, exacerbation, and persistence of chronic fatigue symptoms has been to such an extent that in classical studies, treatment based on rest and avoidance of the work environment was introduced and suggested.²⁴

When researching the symptoms of CFS, it should be noted that personality traits are identified as the significant variables to emphasize that the signs of CFS are not necessarily due to individuals' external situations and working conditions. Calvo et al.⁸ and Geraghty & Blease.⁹ have interpreted any person in any job position may be vulnerable to this disorder. In some investigations performed by Lim & Son.⁴ Monden et al.⁵ and Calvo et al.⁸ with more details, the relationship between CFS and personality traits has been considered significantly, so that the differences in pain perception and psychological distress in the same situations have been observed. In the same direction, numerous psychological variables have been evaluated regarding cognition; for example, it has been shown that neuroticism can significantly predict the severity of chronic fatigue symptoms, especially in

Table 3. Statistical results related to the summary of the fatigue prediction model based on personality traits

Sig. F Change	F Change	R Square Change	Std. Error of the Estimate	Adjusted R Square	R Square	R	Model
0.00	12.129	0.805	0.78783	0.752	0.805	0.851	1

P-value: $P < 0.05$

Table 4. Statistical results related to fatigue effect prediction based on each of the personality traits subscales

Sig.	t	Standardized Coefficients Beta	Std. Error	B	Model
0.007*	-0.533	-0.438	0.144	-0.077	Neuroticism-Emotional Stability
0.058*	0.054	0.044	0.140	0.008	Extraversion-Introversion
0.048*	0.283	0.251	0.146	0.041	Openness - veiling
0.283	1.141	1.369	0.201	0.229	Consensus - Militancy
0.730	-0.356	-0.281	0.130	-0.046	Conscience-irresponsibility

**P*-value: $P < 0.05$

women, due to the degree of self-blame.⁹

Personality traits have been considered as a determining variable in predicting the severity of chronic fatigue, however, there are differences in reports on the relationship between personality traits and the severity of chronic fatigue symptoms, which is why other psychological variables have been evaluated as mediating variables between personality traits and the severity of chronic fatigue symptoms. One of the interpretations given to explain the mechanism of effect of personality traits, especially neuroticism and extraversion, and consequently the degree of suggestibility on perceived stress intensity, has been stated by Wieder et al.¹⁹ that stress is a biological reaction to a potential environmental threat, because high levels of suggestibility can make a person more vulnerable to overestimating environmental hazards. Therefore, the more prominent the personality traits that intensify the level of suggestibility in the individual's psychological structure, the more intense the perceived stress intensity. Therefore, in line with the results of the present study, we can infer that in different job situations, personality traits can reduce or increase a person's vulnerability to chronic fatigue symptoms.⁹

One of the most critical limitations of the present study is the implementation of this research in only one sample of a city. The following limitation was the use of only self-reporting tools. Another limitation of the present study is the non-use of information obtained from interviews with influential people such as family members of the sample. Moreover, in future studies on this subject, qualitative methods and tools based on structured and non-structured interviews are suggested. The next suggestion is that in subsequent studies, samples should be taken from other cities to increase the generalizability of the research results. It is also recommended that the symptoms of chronic fatigue be evaluated comparatively in different occupational groups such as teachers and nurses.

Conclusion

Thus, it is concluded that personality traits, regardless

of occupational differences, can predict vulnerability to the symptoms of chronic fatigue. Therefore, it may be considered that the traditional approach to the symptoms of CFS, requiring people to change job status or quit work to recover from or prevent CFS, will not be fruitful.

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Authors' Contribution

Conceptualization: Hooman Darushi, Maryam Hosseini
 Data curation: Maryam Hosseini
 Formal analysis: Fatemeh Abazari, Nader Abazari, Maryam Hosseini
 Funding acquisition: Fatemeh Abazari, Nader Abazari
 Investigation: Fatemeh Abazari
 Methodology: Fatemeh Abazari, Nader Abazari
 Project administration: Hooman Darushi, Maryam Hosseini
 Resources: Hooman Darushi, Maryam Hosseini
 Software: Hooman Darushi, Maryam Hosseini
 Supervision: Hooman Darushi
 Validation: Hooman Darushi, Maryam Hosseini
 Visualization: Nader Abazari, Maryam Hosseini
 Writing–original draft: Hooman Darushi, Maryam Hosseini
 Writing–review & editing: Hooman Darushi, Maryam Hosseini

Competing Interests

The authors declare that they have no competing interests.

Ethical Approval

Kermanshah University of Medical Sciences has confirmed this research (Ethics Code: KUMS.REC.1395.470). This article considered all ethical principles. The participants were informed about the purpose of the research and its implementation stages; we also assured them about the confidentiality of their information; Moreover, they were allowed to leave the study whenever they wanted, and the research results would be available to them if desired.

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