

CHRONIC FATIGUE SYNDROME IN TEACHERS AND THEIR HEALTH BEHAVIOURS – PRELIMINARY RESULTS

Iwona Barbara Repka^{1,A,B}, Anna Skotniczna^{2,A,C,D,F}, Grażyna Puto^{1,D,E}, Patrycja Zurzycka^{1,D,E}

¹Department of Clinical Nursing, Institute of Nursing and Midwifery, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

²Graduate, Institute of Nursing and Midwifery, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

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Address for correspondence:

Dr Iwona Barbara Repka
Department of Clinical Nursing
Institute of Nursing and Midwifery
Faculty of Health Sciences
Jagiellonian University Medical College
25 Kopernika St.
30-501 Krakow, Poland
e-mail: iwona.repka@uj.edu.pl

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ABSTRACT

Introduction: Fatigue is a phenomenon that is responsible for a deterioration of human living activities and reluctance to make any effort. Professional work is one of the most important activities in human life, and, as such, it requires properly planned rest and relaxation as well as appropriate attitudes aimed at maintaining and improving health.

Aim of the study: The study was aimed at assessing the level of fatigue and the influence of selected factors, as well as verifying their correlation with undertaken pro-health behaviours among teachers of primary and secondary schools.

Material and methods: The study was carried out in a group of 120 teachers with the application of the Checklist Individual Strength (CIS-20R) questionnaire, the Health Behaviour Inventory (HBI), and the authors' self-designed questionnaire.

Results: Chronic fatigue was, on average, higher in secondary school teachers than in primary school teachers (5.98 ± 1.61 vs. 5.72 ± 1.33). An analysis of health behaviour in the group of primary school teachers showed a statistically significant correlation between the general level of chronic fatigue and the Health Behaviour Inventory ($p = 0.041$), undertaken pro-health activities ($p = 0.044$), subjective fatigue perception ($p = 0.025$), and eating habits ($p = 0.032$), as well as between lowered motivation and health activities ($p = 0.028$). However, in the group of secondary school teachers, statistically significant correlations were observed between all fatigue components, teachers' positive mental attitude, and their health behaviours.

Conclusions: The study showed an average level of chronic fatigue in the examined groups of teachers. However, the general level of fatigue had an influence on the Health Behaviour Inventory and on its particular components.

Key words: fatigue, chronic fatigue, pro-health behaviours.

INTRODUCTION

Fatigue is a relatively frequent phenomenon in everyday life. Virtually everybody suffers from fatigue at some time, which leads to both psychosocial and physical consequences, and, therefore, fatigue has become an important issue from a theoretical and clinical point of view [1]. Fatigue is a condition of the whole organism or its particular muscles, internal organs, or nervous system and may be caused by excessive physical or mental activity, which leads to overstraining and depleting energy resources in the organism [2]. Chronic fatigue syndrome (CFS) is a symptom complex, the key component of which is chronic fatigue which lasts more than six months and is accompanied by a sense of exhaustion, frequent need for rest, limited activity, bad mood, morning tiredness, disorders

of autonomous nervous system, immune system, neuroendocrine system, or musculoskeletal system, sleep disorders, and neurocognitive symptoms [3-5]. Other concomitant symptoms include: persistent lack of energy and willingness, irritability, limitations in controlling emotions, feeling depressed and stressed, reduced concentration, and simultaneous physiological disorders [4]. Chronic fatigue syndrome is a persistent, remittent problem, which is not alleviated by rest or limitation of daily activities. It is characterised by its own dynamics of symptoms [6].

Various ways of dealing with fatigue are usually focused on planning proper rest and relaxation as well as sleep in order to regain energy. However, it must be pointed out that undertaking certain activities may disturb social and family life and the daily rhythm

connected with work [7, 8]. A lifestyle represented by a choice of health behaviours formed throughout one's life is the key to dealing with fatigue [9-11]. Health behaviours aim at undertaking conscious, deliberate actions in order to improve one's health [9-12]. Another important factor is pro-health behaviour based on personal beliefs and referring to unconscious reactions with positive or negative meaning [9, 12-15].

AIM OF THE STUDY

The study was aimed at assessing the level of fatigue and verifying its correlation with undertaken pro-health behaviours among teachers of primary and secondary schools.

MATERIAL AND METHODS

The study was carried out in a group of 120 teachers divided into two 60-person groups depending on the place of work: group I – primary school and group II – secondary school workers, from five state primary schools and five state secondary schools.

In order to collect information, the following research tools were used:

- The Checklist Individual Strength CIS-20R prepared by T. Makowiec-Dąbrowska and W. Koszada-Włodarczyk, useful for assessing the level of chronic fatigue in working people. It includes 20 statements scored from 1 to 7, which reflect four aspects of fatigue: subjective perception of fatigue, lowered motivation, limited activities, and decline in concentration [3];
- The Health Behaviour Inventory (HBI) by Z. Juczyński includes four aspects connected with health: proper eating habits (PEH) – focusing on the type of consumed food; preventive actions (PA) – behaviours aimed at following medical recommendations and obtaining information about health and illness; positive mental attitude (PMA) – a group of statements comprising behaviours such as avoiding stress, tension, overly strong emotions and depressing situations; and pro-health activities (PHA) – referring to daily routines connected with physical activity, recreation and amount of sleep. The questionnaire allows for the assessment of the frequency of activities undertaken during the last year on a 5-score scale where 1 means “hardly ever” and 5 means “almost always” [16];
- The authors' own questionnaire, which included information connected with selected sociodemographic data (age, gender, marital status) and dealt with the ailments that teachers suffered from after finishing work and their relationship with their superiors and their students.

Statistical methods

A statistical analysis was carried out with the application of IBM SPSS version 22 software. The Shapiro-Wilk test was applied to evaluate the congruence between the distribution of the examined quantity variables and normal distribution. When all values were measured by means of a quantitative scale and the distribution of variables was close to normal distribution the Pearson correlation coefficient was applied; otherwise, Spearman's correlation coefficient was used. Student's *t*-test was applied in order to show differences between mean values of two different groups with a normal distribution. Then, for two or more groups Fisher Snedecor analysis of variance was carried out followed by an analysis of the chi-square test. The level of significance was assumed at $p < 0.05$.

RESULTS

The study was carried out in a group of people aged between 24 and 59 years, with an average age of 42.63 ± 10.02 years. The respondents were divided into four groups depending on their age: under 30 years, between 31 and 40 years, between 41 and 50 years, and between 51 and 60 years. Among the teachers of primary schools, the dominant group was the one between 31 and 40 years (28%), followed by the one between 51 and 60 years (27%). Whereas, among secondary school teachers the dominant groups included the one between 31 and 40 years (37%) and the one between 41 and 50 years (28%). As far as gender distribution is concerned, the number of women was clearly marked in both groups (group I: 83%, group II: 82%). The analysis of respondents' marital status showed that in both groups most respondents were married (group I: 55%, group II: 68%).

Particular aspects of chronic fatigue in examined teachers reached similar high scores in the sphere of subjective perception of fatigue (group I: 4.01 ± 1.085 , group II: 4.24 ± 1.253) and similar low scores in the sphere of concentration decline (group I: 3.29 ± 1.044 , group II: 3.40 ± 1.149).

The gender of primary and secondary school teachers had no statistically significant influence on the general index of chronic fatigue ($p = 0.577$) or its particular components such as subjective perception of fatigue (group I: $p = 0.739$, II: $p = 0.718$), concentration decline (group I: $p = 0.810$, group II: $p = 0.573$), motivation loss (group I: $p = 0.515$, group II: $p = 0.967$), and activity limitation (group I: $p = 1.000$, group II: $p = 0.544$).

An analysis of results showed differences between groups defined by respondents' age. Primary school teachers aged between 41 and 50 years reported the highest level of chronic fatigue (6.31 ± 1.601), subjective perception of fatigue (4.32 ± 1.263), con-

centration decline (3.66 ± 1.365), and activity limitation (4.08 ± 1.256). In the youngest age group only, under 30 years old, the highest average scores within motivation loss were reported (3.93 ± 1.215).

Similarly, in the group of secondary school teachers aged between 41 and 50 years the highest scores were within general chronic fatigue (6.53 ± 1.663), subjective perception of fatigue (4.56 ± 1.423), and concentration decline (3.89 ± 1.346) were the dominating ones. The oldest age group (between 51 and 60 years) reported mainly intensification within lowered motivation (4.17 ± 1.186) and activity deterioration (3.94 ± 0.818).

A statistically significant difference within activity deterioration was found between primary school teachers aged between 41 and 50 years and those aged between 51 and 60 years ($p = 0.041$). In group II statistical significance was observed in the correlation of general index of chronic fatigue ($p = 0.015$), concentration decline ($p = 0.031$), lowered motivation ($p = 0.007$), and the oldest group of examined teachers.

Marital status had no influence on the level of chronic fatigue or its components in the group of primary school teachers or in the secondary school teachers. No statistically significant differences based on respondents' marital status were observed between the groups.

No statistically significant correlation was observed between the incidence of chronic fatigue and the relationship between the respondents from group I and their superiors, co-workers, and students ($p > 0.05$). On the other hand, a negative correlation was observed between the relationship of secondary school teachers and their superiors ($p = 0.029$) and other teachers ($p = 0.011$) and the incidence of chronic fatigue, which meant that the respondents who did not get on with their principals and colleagues were more likely to suffer from severe fatigue. The study implies that the relationship with students had no significant influence on the level of fatigue in either of the examined groups.

A statistically significant correlation was observed in primary school teachers between the frequency of the incidence of subjective fatigue ($p = 0.049$) and irritation ($p = 0.041$) and the incidence of chronic fatigue syndrome. It was a weak positive correlation.

The results of an analysis showed that an increase in the frequency of experiencing subjective fatigue and irritation after finishing work is accompanied by an increase in the general index of chronic fatigue.

In the case of primary school teachers, the best average results for particular categories of health behaviours were obtained in the area of positive mental attitude (3.7 ± 0.591). Slightly lower scores were obtained in the area of proper eating habits (3.57 ± 0.757). The lowest results were connected in the category of pro-health activities (3.2 ± 0.586). Also, in the case of secondary school teachers the highest average scores for health behaviours were obtained in the area of positive mental attitude (3.59 ± 0.587). The lowest scores were obtained in the area of preventive measures (3.45 ± 0.739) and proper eating habits (3.43 ± 0.730). Additionally, in the case of secondary school teachers the lowest results were connected with the category of pro-health activities (3.17 ± 0.505) (Table 1).

A comparison of the level of pro-health behaviours and the level of fatigue showed a statistically significant correlation between the general level of chronic fatigue and the health behaviour inventory (HBI) ($p = 0.041$) and undertaken pro-health activities (PHA) ($p = 0.044$). The correlation had a negative character, and it was weak but distinct. The higher the index of chronic fatigue reported by the primary school teachers, the lower the level of health behaviours and health activities they presented. There was a weak negative correlation between subjective perception of fatigue in primary school teachers and the general HBI and proper eating habits (EH) ($p = 0.032$). The teachers with higher perception of fatigue obtained lower scores in the area of health behaviour inventory and proper eating habits in comparison with primary school teachers. Lowered motivation was correlated with health activities ($p = 0.028$), and this correlation had a negative character. Analysis showed that lowered motivation was connected with health activities and a lower health behaviour index in primary school teachers (Table 2).

The study also showed a negative correlation between the level of health behaviours ($p = 0.02$), positive mental attitude ($p = 0.005$), as well as undertaken

Table 1. Results for particular categories of health behaviours in the Health Behaviour Inventory (HBI)

Categories of health behaviours	<i>n</i>	<i>M</i> (group I/group II)	<i>SD</i> (group I/group II)	Min (group I/group II)	Max (group I/group II)
Proper eating habits (PEH)	60	3.57/3.43	0.757/0.730	2/1.67	5/4.83
Preventive actions (PA)	60	3.47/3.45	0.745/0.739	1.7/1.67	5/4.67
Positive mental attitude (PMA)	60	3.70/3.59	0.591/0.587	2.3/2.33	5/4.83
Pro-health activities (PHA)	60	3.20/3.17	0.586/0.505	2/2.17	4.7/4.17

n – number, *Min-Max* – minimum-maximum, *M* – arithmetic mean, *SD* – standard deviation, *Group I* – teachers of primary schools, *Group II* – teachers of secondary schools

Table 2. Correlation between of the Health Behaviour Inventory (HBI) and general level of chronic fatigue of residence

CIS-20R	HBI (group I/group II)		PEH (group I/group II)		PA (group I/group II)		PMA (group I/group II)		PHA (group I/group II)	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
	GCF	-0.265/ -0.301	0.041/ 0.02	-0.216*/ -0.191**	0.098/ 0.143	-0.065/ 0.002	0.62/ 0.987	-0.188/ -0.357**	0.15/ 0.005	-0.261/ -0.341
SPF	-0.29/ -0.352	0.025/ 0.006	-0.277/ -0.212	0.032/ 0.105	-0.041/ -0.067	0.755/ 0.61	-0.249/ -0.409	0.055/ 0.001	-0.184/ -0.374	0.159/ 0.003
DC	-0.204/ -0.227	0.119/ 0.081	-0.185/ -0.113	0.157/ 0.39	-0.029/ 0.001	0.828/ 0.995	-0.187/ -0.279	0.153/ 0.031	-0.165/ -0.255	0.208/ 0.049
LM	-0.178/ -0.229	0.174/ 0.079	-0.069/ -0.161	0.6/ 0.219	-0.162/ 0.078	0.216/ 0.553	-0.15/ -0.365	0.253/ 0.004	-0.284/ -0.258	0.028/ 0.046
LA	-0.105/ -0.211	0.423/ 0.105	-0.136/ -0.106	0.301/ 0.422	0.051/ -0.01	0.701/ 0.942	-0.095/ -0.264	0.469/ 0.041	-0.226/ -0.249	0.083/ 0.055

p – statistical significance coefficient, *r*–Pearson’s correlation, Group I – teachers of primary schools, Group II – teachers of secondary schools, Checklist Individual Strength (CIS-20R): general chronic fatigue (GCF), subjective perception of fatigue (SPF), decline in concentration (DC), lowered motivation (LM), limited activities (LA), Health Behaviour Inventory (HBI), proper eating habits (PEH), preventive actions (PA), positive mental attitude (PMA), pro-health activities (PHA)

health activities and general values of chronic fatigue ($p = 0.008$), in the group of secondary school teachers. A lower level of selected health behaviours in teachers (PMA, HA) was connected with the intensification of chronic fatigue. The teachers with higher level of chronic fatigue represented a lower health behaviour inventory and were unwilling to participate in physical activities aimed at maintaining good health. Also, a negative correlation of medium intensity was observed in secondary school teachers between general scores of pro-health behaviours ($p = 0.006$), positive mental attitude ($p = 0.001$), undertaken health activities ($p = 0.003$), and subjective perception of fatigue. The respondents with higher perception of fatigue obtained lower scores in the area of general health behaviours, mental attitude, and health activities in comparison with the teachers who declared a lowered level of subjective perception of fatigue (Table 2).

Positive mental attitude as well as health activities had a positive impact on the level of concentration and motivation ($p < 0.05$). The respondents with a lower level of positive mental attitude and health activities had worse concentration and motivation than the secondary school teachers who had higher scores in the area of positive mental attitude and health activities (Table 2).

DISCUSSION

An analysis of the findings obtained in the study made it possible to provide answers to research problems specified beforehand. In the examined group of teachers, the general index of chronic fatigue fluctuated on an average level, which leads to the conclusion that the workplace had no influence on the level of fatigue. No studies relating to the same professional group were found, so it is impossible to compare

the findings. The only professional group in which the level of fatigue was verified by CIS-20R were policemen, whose results showed a high level of fatigue [17, 18]. Although fatigue is a common phenomenon and leads to deterioration of the quality of life and work efficiency, there is little research that addresses this issue. Research focuses more frequently on the intensity of fatigue and its relationship with a particular kind of work [3].

In the authors’ own study, particular areas of chronic fatigue such as subjective perception of fatigue, decline in concentration and motivation, or activity limitation fluctuated on an average level both in primary and secondary school teachers.

In a study by Urbańska [19] a higher level of fatigue caused by everyday life was observed in women, which is confirmed by other authors [17, 18].

In the authors’ own study, the average results were similar both in women and men. Therefore, it may be concluded that primary and secondary school teachers’ gender does not affect the general level of chronic fatigue or its particular domains. It was found that in the case of primary school teachers, their age has a negative impact on their physical activity. On the other hand, in the case of secondary school teachers, their age influenced their level of chronic fatigue and led to deterioration in concentration and motivation. Respondents aged under 30 years reported a lower level of chronic fatigue. In the case of elderly teachers, a decline in concentration and motivation was less frequent.

Urbańska’s findings proved a difference in the general level of chronic fatigue observed in teachers belonging to particular age groups, which means that the lowest index of chronic fatigue was observed in the youngest respondents [19]. Also, in Chojnacka-Szawłowska’s study the phenomenon of the level of

perceived chronic fatigue increasing with age was observed [20]. Another study by Jodzio and Treder led to a similar conclusion that vulnerability to chronic fatigue increases in elderly people [1].

An analysis of the authors' own study and the study by Urbańska [19] showed that marital status had no influence on the general level of chronic fatigue either in the case of primary or secondary school teachers.

During the study an analysis of relationships of respondents with their superiors, co-workers (other teachers), and students was carried out. No correlation was observed in the case of secondary school teachers between chronic fatigue and the relations between aforementioned people. On the other hand, in the case of primary school teachers, a correlation was observed between the relations with other teachers and superiors and the level of chronic fatigue, which became more and more severe as the relationships between the aforementioned people deteriorated. No statistically significant influence of relations with students on the level of fatigue was observed. These findings are surprising as teachers spend more time with students than with their colleagues, which might considerably affect perceived fatigue.

Also, another study by Wodzyńska *et al.* emphasised the importance of the atmosphere and interactions at work, which affect the respondents' mood [21].

Wodzyńska *et al.* confirmed the findings that the sense of fatigue is the most frequent problem in secondary school teachers [21, 22].

An analysis of the results proved that in primary and secondary school teachers reported an average general index of pro-health behaviours.

The study conducted by Woynarowska-Sotdan and Węziak-Białowolska pointed out problems in the area of teachers' health behaviours [15]. Therefore, it is particularly important to emphasise respondents' individual responsibility for their health [23].

The study analysed the level of health behaviours, taking into account: proper eating habits, preventive measures, mental attitude and undertaken pro-health activities. Both in primary and secondary school teachers the best average scores were obtained in the area of positive mental attitude (group I: 3.70 ± 0.60 , group II: 3.59 ± 0.59). Proper eating habits was second in the group of primary school teachers (3.57 ± 0.76), whereas in the group of secondary school teachers it was preventive measures (3.45 ± 0.74). The lowest results in the examined teachers were obtained in the area of undertaken pro-health behaviours (group I: 3.20 ± 0.59 , group II: 3.17 ± 0.51) [16].

Similarly, the findings obtained by Juczyński in his study conducted in a group of primary school teachers prove that undertaking actions based on psychological factors (3.53 ± 0.61) was one of the most dominant

components of pro-health activities, preventive measures came next (3.45 ± 0.76), and the area connected with proper eating habits was last (3.13 ± 0.85) [16].

The authors' own study showed a correlation between the level of general chronic fatigue and the Health Behaviour Index (group I: $p = 0.041$, group II: $p = 0.02$) as well as undertaken pro-health activities (group I: $p = 0.044$, group II: $p = 0.008$). The higher the level of general chronic fatigue experienced by the teachers, the less likely they were to undertake pro-health activities or follow pro-health routines, including their sleeping habits, rest and relaxation, or physical activity, in comparison with the teachers who declared a lower level of fatigue.

An analysis of the findings showed that a decrease in motivation has a negative impact on health activities (group I: $p = 0.028$, group II: $p = 0.046$). Primary school teachers with lower motivation reported lower index of health behaviours. Apart from that, in the case of secondary school teachers, the intensity of chronic fatigue was significantly influenced by psychological resources, including coping with strong emotions, depressing situations, and stress. A higher sense of fatigue in the examined secondary school teachers was followed by worse results in the area of pro-health behaviours, mental attitude, and lower level of undertaken health activities than in the case of teachers reporting a lower intensity of fatigue.

Secondary school teachers who presented a lower impact of psychological factors and lower level of activities aimed at improving their health also showed worse concentration and motivation.

CONCLUSIONS

1. In the examined groups of teachers, chronic fatigue and its particular components fluctuated on an average level.
2. There is a correlation between respondents' age and the incidence of chronic fatigue. However, no correlation was found between their gender or marital status and the intensity of fatigue.
3. There is a correlation between health behaviour index, health activities, proper eating habits, and the level of chronic fatigue in primary school teachers.
4. In the group of secondary school teachers, the level of chronic fatigue is influenced by their Health Behaviour Index, positive mental attitude, and health activities.

Disclosure

The authors declare no conflict of interest.

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