The European Proceedings of
Social & Behavioural Sciences
EpSBS

Future Academy ISSN: 2357-1330

http://dx.doi.org/10.15405/epsbs.2017.05.02.199

Edu World 2016
7th International Conference

THERAPEUTIC EDUCATION AND HEALTH PROMOTION IN INDIVIDUALS WITH NEUROPSYCHOLOGICAL OVERLOAD SYNDROME

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Abstract

The supervision of health status is commonly associated with physiopatological aspects of various diseases, but also with identifying the possibilities of correcting the imbalances discovered. Increasingly nowadays, we are faced with trends and challenges for early detection or anticipation of pathological markers and for establishing how reliable are the clinical and therapeutic methods applied for a specific pathology. In this respect, the intensity of body's response to different measures should be accordingly quantified using the most accurate and efficient assessments. This study aims to determine the level of impact and the intensity of the body's response to physical or mental overload, alongside with identifying the context with increased risks for this imbalance and setting the appropriate therapeutic approach. For the research purposes we had monitored 50 student subjects, 25 of them only studying (the witness group) and 25 which were also working with a part-time job program (the experimental group). An assessment system which included testing of attention, monitoring cardiovascular parameters, type of activity and level of job-specific demands, sleep quality, mood and appetite. The analysis of our recorded data highlighted the importance and interdependence between possible causal factors, pathological condition, the evaluation system and the proposed therapeutic measures. Health specialists should offer assistance and guidelines in order to prevent the overload syndrome and to improve the quality of life of people in a multitasking environment. Our proposed protocol can contribute to health promotion and optimization of individuals' recovery process, fastening thus their social and work reintegration.

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Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

Keywords: Therapeutic education; health promotion; overload syndrome.

1. Introduction

The complex relationship between the external factors and individual's internal factors is one of the most important aspects that set the bounds of health status. Depending on their share of influence, specific disruptions with more or less pathological character can occur. By prolonged exposure of the body to such circumstances, even at low intensities, functional changes will appear. Through a cumulative effect they can cause an imbalance of body's homeostasis and consequently deteriorating health.

Most of the health promotion strategies target people with chronic diseases or elderly and thus leave a gap in what concerns the health of young people (Kavalieratos et al., 2015). The working capacity of an individual depends on the duration and the intensity of the effort that he must carry on. Time and space monotonous activities were proved to decrease the concentration capacity and work interest, as well as to induce attention, memory and learning disorders, favouring the onset of fatigue. The proportion between the theoretical and practical activities in the students' daily program, the alternation of active periods with inactive ones, breaks conformity, nutrition, rest and program diversification are all factors that facilitate recreation or underlines both, physical and mental disturbances (Blackwood et al., 1998; Kumar & Bhukar, 2013).

Fatigue is a subjective symptom, widespread in patients, but also common in the healthy population. Usual, fatigue symptoms include lack of energy, tiredness, decreased attention, weariness, anxiety, irritability, altered mood, behaviour disorders, somnolence, lack of interest and decreased memory. Contributing factors to this situation may be associated with general health status, lack of sleep, poor nutrition, emotional distress, conflicting situations etc. Whether it has physical or psychological causes, fortunately in student population fatigue is self-limited and reversible, if treated early (López & Vázquez, 2003; Hershner & Chervin, 2014). Chronic fatigue decreases the body's ability to adapt to environmental and activity imposed conditions and it affects also the effort capacity. Once the process is initiated, it leads to the necessity of resting the overused functions and initiating the body's own recovery mechanisms (Mazon, 2014). Recovery is a physiological process that includes the specific response of exhausted body, which is still capable to solve its own accrued deficiencies and to restore the functional balance. When the body's self-regulating physiological capacity is exceeded, therapeutic interventions for the rehabilitation of altered functions are imposed.

2. Theoretical Foundation and Related Literature

The students' integration into the university life is a multidirectional process influenced by external aspects related to the academic or socioeconomic environment, but also by individual's internal factors and his/her ability to cope with new situations (Facundes & Ludermir, 2005; Myers et al., 2012). Some studies have demonstrated a high prevalence of fatigue among students. They also identified nutrition, exercise habits, insomnia or greater amount of sleeping time and chronic disease history as significant predictors for its onset (Lee, Chien & Chen, 2007).

Overload syndrome and chronic fatigue are intricate conditions characterized by physical cognitive and emotional complaints. During student life, such distress can lead not only to sleep

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difficulties, but also to mood changes, frustration, depression, memory dysfunctions, and decreased academic performance, low self-esteem and poor quality of life (Gaultney, 2010; Pagnin & De Queiroz, 2015; Fares et al., 2016).

Increasingly nowadays we are faced with trends and challenges for early detection or anticipation of pathological markers and for establishing how accurate and reliable are the clinical and therapeutic methods applied for a specific pathology. In this respect the intensity of body response to different measures should be accordingly quantified using the most accurate and efficient assessments.

3. Methodology

We started from the working hypothesis according to which the change of life status and the diversification of possibilities for integration into the student activity require the activation of neuropsychological and physical coping mechanisms. Consequently, this will lead to acute or chronic cumulative overload, resulting in disturbances of the health status which impact the functional activity and quality of life.

The purpose of our research was to realize a survey of subjective manifestations of fatigue as a significant step for the complex planning of specific assessment. Further on, their integrative interpretation can lead to outlining the key physiological factors that needs to be investigated for an accurate identification of neuropsychological, physical or mixt fatigue syndrome, in acute phase or with chronic potential. The main objectives of the research refer to using simple criteria for an appropriate identification of the different stages of fatigue, establishing the general context of clinical-therapeutic approach and screening of proposed remedies.

For the practical conduct, our research tasks can be summarized as follows: exploration of the socio-vocational context of the students; identification of extraprofessional factors; investigation of profession specific factors, relationships with colleagues and teachers and individual factors; health evaluation, subjective and objective symptomatology; setting the category of fatigue; establishing the diagnosis and treatment protocol; clinical delimitation of fatigue predisposition, fatigue and respectively overload status; proposal of remedies and conclusions.

We had 50 student subjects (N=50) equally divided into experimental and witness group. The inclusion criteria for the experimental group (n=25) were having a part-time job and the availability to be monitored on the requested data. The control group (n=25) included subjects who had no other occupation than their student status. The overall context of subjective signs assessment led to establishment of: main or trigger factors (specific activities, rest, study conditions, social and family relations, daily schedule, food); secondary factors (age, gender, social status, culture, religion, living conditions, transport, companions, coffee, alcohol, smoking, drugs, associated diseases) and socio-professional factors (activity type, intensity, duration, timing, distribution of activities throughout the day, interpersonal relationships, conflict situations, exams, money, marks etc.).

In order to realize a multidirectional evaluation of students in the context of overload working tasks, we proposed a protocol that comprises: anamnesis (present dates and personal medical history); attention testing (Concentrated attention Toulouse-Pieron test); evaluation of the cardiovascular adaptive capacity on physical effort (The Ruffier functional test); neuro-vegetative adaption reactions to physical effort (The Schellong test, Crampton index - measures the modifications in blood pressure and heart rate

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when changing from clinostatic to orthostatic position, Brouha index – evaluates the adaptation and body recovery after physical activity), global self-appreciation of quality of life and body mass index reported to ideal weight.

4. Results

From the total number of subjects, we had 17 women and 8 men in the experimental group. Their specialties were physiotherapy and occupational therapy. The control group included 15 women and 10 men. The subjects' age varied between 19-25 years old and there were not significant differences between the average ages of the two groups (mean: 20.8 years for experimental group and 20.4 years for the control group). The monitoring and evaluation activity was conducted in the same conditions for both groups and other relevant socio-demographic data collected are summarized in Table 1.

Table 1. Distribution of socio-demographic characteristics of the study population.

Characteristic	Experimental group n (%)	Witness group n (%)
Gender		
male	8 (32)	10 (40)
female	17 (68)	15 (60)
Study specialty		
physiotherapy	16 (64)	14 (56)
occupational therapy	9 (36)	11 (44)
Living conditions		
apartment/house	7 (28)	16 (64)
student housing	18 (72)	9 (36)
Transportation		
own car	5 (20)	8 (32)
public transport	20 (80)	17 (68)
Smoking		
yes	8 (32)	4 (16)
no	17 (68)	21 (84)
Conflictual situations	9 (36)	3 (12)

Further on, after recording and interpreting the results obtained by the subjects of both groups at the specific applied tests, there is an obvious higher presence of disorders among students from the experimental group, which are also working, comparing with those from the witness group (Table 2).

Table 2. Distribution of identified disorders in the study groups.

	Experimental group %	Witness group %
Sleep disorders	15	10
Psychophysiological disorders	12	8
Sensorial disorders	16	10
Appetite disorders	22	10
Behavioral disorders	8	4
Impaired quality of life	17	3

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This is not surprising considering their higher exposure to physical and psychosocial distress factors. Registration of subjective manifestations associated with fatigue was another objective of our research. They can be divided into sensorial manifestations (25%), neuro-vegetative symptoms (55%) and psycho-emotional alterations (25%), as it can be seen in Table 3.

Table 3. Distribution of subjective symptoms identified in the study groups.

	Experimental group %	Witness group %
Sleepiness	22	13
Drowsiness	33	11
Apathy	9	3
Anxiety	3	1
Irritability	7	2
Irascibility	3	0
Asthenia	14	4
Boredom	2	2
No complaints	8	64

5. Discussions

The data reported in this study are sensitive and specific related to the objective signs and also subjective symptoms of physical or psychological imbalances of the body. Our results showed that appetite, quality of life and sensory functions and sleep were significantly more affected in students who are also working, comparing to those who are not ($p<0.05$). In this respect we want to emphasize the importance of obtaining sufficient sleep in order to prevent high levels of acute fatigue. Studies examining sleep quality have found a positive relationship between sleep quality and self -reported health and well-being (Pilcher, Ginter & Sadowsky, 1997).

Patients with chronic fatigue syndrome often manifest emotional changes which include anxiety, frustration, depression and difficulties in self-control of angry feelings (DeLuca et al., 1995). In our study, drowsiness, sleepiness, asthenia and apathy were highly reported subjective symptoms in the experimental group with significant differences related to the witness group ($p<0.05$). All these results confirm the working hypothesis that, cumulative overload impacts the functional activity and quality of life.

Although work-related fatigue was identified as a potential hazard for youth health, academic achievement, and occupational safety, very few studies have specifically addressed its correlates and possible predictors (Laberge et al. 2011). Other studies suggest that prevention strategies devised to minimize work-related fatigue in students should consider exposure to physical work factors (Zierold Garman & Anderson, 2005).

The findings from our study highlighted also disturbances of the body capacity to adapt to the specific demands of physical effort and a low neuro-vegetative reaction to the influence of external factors. Considering all this and the results of previous studies on this topic we developed a short

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interview guide that addresses to both physical and psychological components of students' adaptation to the academic demands in the context of having a job.

The questionnaire for complex assessment of fatigue has 14 items, besides registration of personal dates, as follows: 1. type of job; 2. the level of stress; 3. the level of physical effort; 4. the level of intellectual effort; 5. sleep disorders; 6. appetite disorders; 7. behaviour disorders; 8. concentration disorders; 9. attention disorders; 10. tiredness; 11. body mass index (BMI); 12. Ruffier index; 13. Crampton index and 14. Schelong test. We chose a six-point Likert scale (from 0-without difficulties to 5-great difficulties) to quantify the dimensional constructs. Then, based on the total score, five corresponding categories will result: overload syndrome (>56 points), intense fatigue (43-56 points), moderate fatigue (29-42 points), low intensity fatigue (15-28 points), very low intensity fatigue (<15 points).

This is only a proposal. The questionnaire will be included in a larger study with an expanded number of subjects and respecting the rigors of qualitative research, for its validation as a screening tool for associated symptoms of chronic overload. It can be also used for prescribing the remedies: classic recovery (massage, physical exercise, swimming, dancing, cycling, jogging and prophylaxis) for a total score under 30 points; complex recovery (neuropsychological, metabolic, hydro-electrolytic rebalancing, dietary regimen, massage and hydro-thermal therapy) for a total score under 50 points and a combination of previously recommended methods, plus medication and medical supervision for a score over 50 points.

6. Conclusions

The general conclusions of the research cover the identification of occupational risks (causes, factors, preventive measures, curative improvement proposals) hygiene problems.

The elaboration of the working programme for students must take into account the share of theoretical courses, practical activities, work and lunch breaks and not least, the complexity and the difficulty of activities.

For students working, both the programming and participation in specific student activities overcharge the body, without though causing clearly associated pathologies or exceeding the physiological limits. However, this is relative and cumulatively it can affect the body functions with time. Early signs screening and the therapeutic recommendations for each identified phase become mandatory and it has a prophylactic or recovery character.

The rehabilitation in overload syndrome requires a complex and concentrated intervention combining monitoring methods and medical treatment. It also involves a long period of time, which can affect the professional career of individuals concerned. The protocol proposed by us allows the diagnosis of overload syndrome in different evolving stages and respectively the appropriate intervention of prophylactic or therapeutic measures.

A good compliance to early indications and timely implementation of the proposed measures helps to reduce the evolving potential and also exacerbation of the subjective and objective symptoms. By respecting a healthy lifestyle in an attractive combination of student, professional and extra-student activities, there can be provided sufficient means of diversification and active leisure activities, which in turn maintain the productive capacity of the individual.

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