

## AN EXERCISE PROGRAM ADAPTED FOR HAEMOPHILIA PATIENTS

ADAPTAREA UNUI PROGRAM DE EXERCITII FIZICE PENTRU  
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**Key words:** hemophilia, physical effort, exercise program, health

**Cuvinte cheie:** hemofilie, efort fizic, exerciții fizice, sănătate

**Abstract**

**Introduction.** Currently it is considered that health has some very important dimensions - physical, mental, social - and each contributes to the welfare condition of a person. In order to preserve good health, a person must examine each of these dimensions and guide themselves in the sense that is permitted not only to live a long time, but to remain healthy as long as possible.

**Material and methods.** The study was conducted on a sample of 200 subjects grouped into two groups of equal size, patients with hemophilia A and B (50%) and a control group (50%). With the World Health Organization survey Quality of Life (WHOQOL 100) scales were measured overall health and the environment.

**Results.** The results are statistically significant,  $p < .01$ ,  $p < .05$ . This means that there are differences between the non-hemophiliacs and hemophiliacs, hemophiliacs have a lower level of quality of life, compared to non-hemophiliacs.

**Conclusions.** Hemophilia puts its mark on the general quality of life, and the health perception is deeply affected to patients from the study batch compared to the one from the healthy subjects batch.

**Rezumat**

**Intruducere.** În prezent, se consideră că sănătatea are unele dimensiuni foarte importante - fizice, mentale, sociale - și fiecare contribuie la starea de bunăstare a unei persoane. Pentru a păstra o sănătate bună, o persoană trebuie să examineze fiecare din aceste dimensiuni și să se ghideze în sensul că, este permis nu numai de a trăi o lungă perioadă de timp, dar să rămână sănătos, atâta timp cât este posibil.

**Material și metode.** Studiul a fost efectuat pe un eșantion de 200 de subiecți, grupați în două grupuri egale, pacienți cu hemofilie (50%) și un grup de control (50%). Pentru evaluarea stării generale de sănătate a subiecților luați în studiu s-a folosit Scala WHOQOL 100.

**Rezultate.** Rezultatele sunt semnificative statistic,  $p < .01$ ,  $p < .05$ . Acest lucru înseamnă că există diferențe între non-hemofilici și hemofilici, hemofilicii au un nivel mai scăzut al calității vieții, în comparație cu non-hemofilici.

**Concluzii.** Hemofilia își pune amprenta asupra calității generale a vieții, iar percepția stării de sănătate este profund afectată la pacienții lotului de studiu în comparație cu cea a lotului de subiecți sănătoși clinic.

**Introduction**

Hemophilia is a rare disease with a potential invalidating evolution. Under the terms of an appropriate treatment, the life expectancy of patients is normal, their social integration is really good, the number of complications is minimal or absent, and the quality of life is unaffected. In the absence of prompt and appropriate therapy in terms of quality and quantity has consequences both physically and psychologically: a high degree of chronic psoriasis arthropathia requiring orthopedic and surgical treatment; the decrease in muscular strength and joint mobility which has as a consequence a poor social integration of the adult hemophiliacs; post-transfusion infectious

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complications that decrease the life expectancy of patients; numerous and prolonged hospitalizations, followed by frequent absences from school or work; impairment of social integration of patients and their family members; family life of patients being harmed; the patients necessity for long term financial support [1,2].

The literature indicates prophylaxis for improving the health of patients with hemophilia. Research has shown that active people have fewer problems with bleeding compared to those who practice sport and have a higher weight than normal.

Because it is a hereditary disease, hemophilia can not be prevented. Also, will consult a specialist in creating a model of exercise for people with hemophilia. Practicing cautiously daily physical exercise increases muscle strength and help prevent bleeding. It is important to prevent joint bleeding as it can lead to severe disabilities.

### **Aim**

The present study aims to assess some dimensions of quality of life of hemophilia patients and adapt an exercise program specific to this category of patients in order to improve health and life.

### **Hypothesis**

The general health of haemophilia patients is lower than that of the healthy population.

### **Material and methods**

The study was conducted on a sample of 200 subjects grouped into two groups of equal size. The clinical study group (50%) is made out of patients with hemophilia A and B are in the records and treatment of the Clinical Assessment and Recovery Centre "Cristian Serban" from Buzias. The control group (50%) is made up of people without hemophilia, which are in different public institutions, and their selection was made in accordance with the criteria established for the whole study group. The clinical batch consists of 100 people with hemophilia A and B, with ages between 16 and 45 years, while the control group is made up of 100 people without hemophilia.

With the World Health Organization survey Quality of Life (WHOQOL 100) scales were measured overall health and the environment. The results obtained were used to adapt a special exercise to increase the quality of life and improving health.

The environment domain has the following components: safety and physical security, family environment, financial resources, health and social care (accessibility and quality), the opportunity to acquire new information and skills, participation in possibilities for recreation/spending free time, physical environment (pollution, noise, traffic, climate), transport.

### **Results**

We used Levene test for testing homogeneity of variance. The result is statistically significant, which indicates that dispersions are heterogeneous [3],  $F(5, 194) = 3.939$ ,  $p < .01$ .

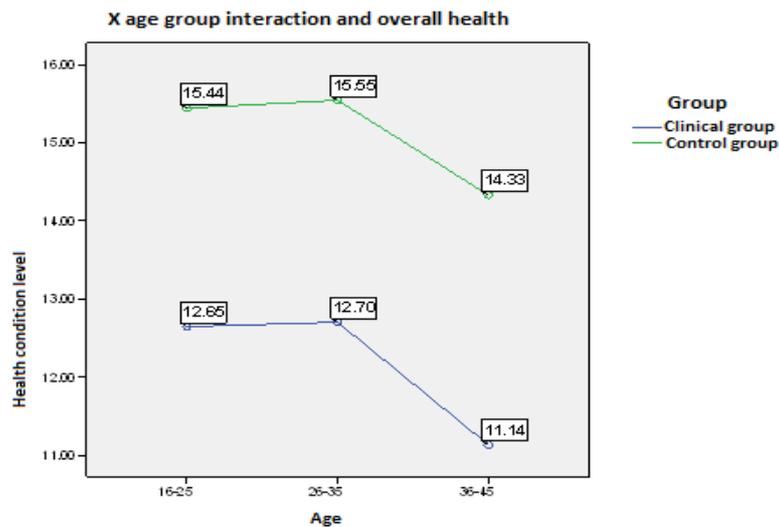


Fig.1.Interactive graphics - X age group and general health

Of the three ratios F only one is statistically significant:  $F(1, 194) = 31.099, p < .001$  ( $M = 12.33$  versus  $M = 15.40$ ). This means that there are significant statistical differences between the non-hemophiliacs and hemophiliacs, hemophiliacs have a lower level of overall quality of life, compared to non-hemophiliacs, due to the fact that the main effect for batches (hemophiliacs versus non-hemophiliac) is statistically significant [Fig. 1].

Assessing the general state of the quality of life consists in highlighting the effect that different pathological events have on the patient's life, taking into account the personal satisfaction and participation in social life.

The importance of subjective assessment of general condition of quality of life is recognized [4] demonstrating thus, significant differences existing both between patients and healthy population, and between the one made by the doctor and the patient [5].

Low score, within the scope of the overall quality of life, is because subjects self evaluate their overall health as being precarious and, moreover, consider that there is a possibility that their condition will worsen.

To test the homogeneity of variance on the environment, Levene test indicates a statistically significant result, which shows that the dispersions are heterogeneous [idem],  $F(5, 194) = 2.487, p < .05$  [Fig. 2].

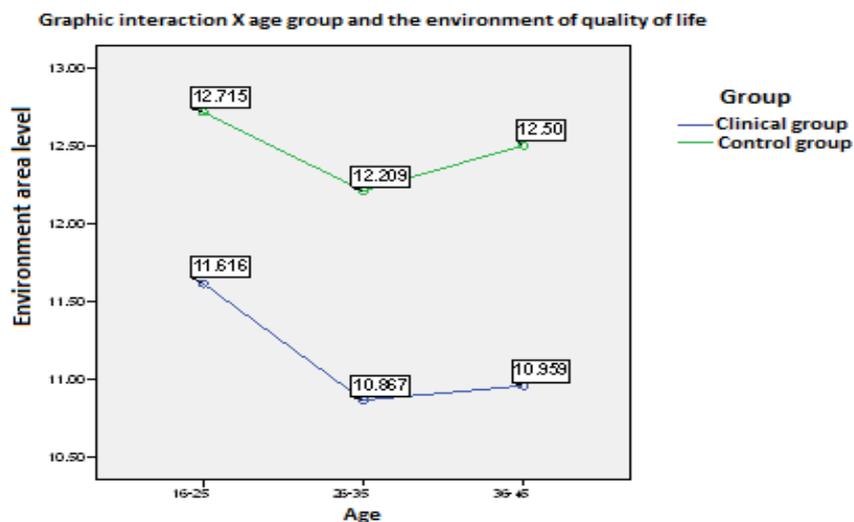


Fig. 2.Interactive graphics - the age group X and environment quality of life

Of the three F reports both main effects are statistically significant: F „lot” [F(1, 194)= 36,159,  $p < .001$ ], i.e. F "age" [F(2, 194)= 5,491,  $p < .01$ ]. This means that there are significant statistical differences between the non-hemophiliacs and hemophiliac, hemophiliacs have a lower level of quality of life on the environmental domain, compared to non-hemophiliacs, due to the fact that the main effect for batches (hemophiliacs versus non hemophiliacs) is statistically significant (M= 11,49 versus M= 12,16).

The effect of the age variable over the social relations domain variable of the quality of life is statistically significant F(2, 194)= 5,491,  $p < .01$ . This means that significant differences between the three age groups in hemophiliacs were found (M=11,61 for 16-25 years, M=10,86 or 26-35 years and M=10,95 for 36-45 years), compared to non-hemophiliacs (M=12,71 for 16-25 years, M=12,20 for 26-35 years and M=12,50 for 36-45 years). Taking into account the fact that the variable has three stages, and that F is a general test, type omnibus, to observe what differences are significant we resort to post hoc comparisons. Whereas dispersions are heterogeneous and groups deeply uneven, the Games-Howell test is the most suitable procedure for calculating the specific differences between the three age groups [idem].

## Discussions

As with other chronic conditions, in the case of hemophilia, the appropriate treatment is not used for curing the disease, but for maintaining a normal lifestyle, free from suffering and for stopping the evolution towards deficiency, disability or handicap.

Of course, along with proper treatment, other important factors are involved like cultural, familial, socio-demographics, education and training, economic level of the country, the accessibility to care, safety and physical security, everyone's ability to acquire new skills and to use them [6].

In the absence of a substitutive treatment any injury can be fatal, with adverse consequences on the quality of life, and it is expected that the hemophiliac patients to live with the feeling of insecurity.

A disabled person needs certain conditions, and expectations are high in this regard, limited financial resources do not provide the comfort they need, all things putting their mark on the quality of life.

Health and social care system explore the opinion towards the medical and social systems which benefit the person, quality and availability, satisfying the expectations and needs. The medical and social services access, support from the community and from the authorities are evaluated.

The subjects of the clinical lot assess unfavorable they access and quality of medical services and social protection, which leads to statistically significant differences between the two groups.

The absence of adequate therapeutic means, specialized centres for the treatment of hemophilia where multidisciplinary teams, is responsible for the decrease in compliance to treatment and quality of life.

Participation in the opportunities for recreation/leisure examine the possibility and willingness to participate in various recreational and leisure activities (sports, reading, spending free time). The questions include ability, opportunity and pleasure to carry out recreational activities.

Statistically significant differences between the two groups studied, show that either the possibilities of recreation and spending their free time are reduced, either the unfavorable medical conditions (presence of hemophiliac arthropathy and the increased risk of bleeding) do not allow such activities.

There are statistically significant differences between hemophiliacs and non-hemophiliacs in the general field of the quality of life, due to the fact that the main effect for batches (hemophiliac versus non-hemophiliacs) is statistically significant: F „lot” F(1, 194)= 31,099,  $p < .001$  (M= 12,33 versus M= 15,40).

The low score, within the domain of overall quality of life, is due to the fact that subjects are auto-assessing their overall health situation as being poor and, moreover, consider that there is a possibility that their condition will worsen.

Statistically significant differences are found between hemophiliacs and non-hemophiliacs on the environment domain, the main effect for batches (hemophiliacs versus non-hemophiliacs) being statistically significant F „lot” [F(1, 194)= 36,159, p < .001], respectively F „age” [F(2, 194)= 5,491, p < .01].

Furthermore, there are statistical significant differences in terms of quality of life on the environment domain between individuals from the three age groups, meaning that those in the age group 16-25 years tend to have a higher level of environmental concern compared those in the 26-35 year group (Games-Howel = 0,79, p<.01), as well as compared to those from the 36-45 years group (Games-Howel = 0,97, p<.01). And in terms of quality of life in the domain of environment between individuals in the age group 26-35 years and those from the 36-45 years group (Games-Howel = 0,18, p>.05), there are no statistically significant differences.

In this study, we started from the idea of measuring the quality of life of patients through comparison with hemophilic population healthy. At the same time, we propose a program of physical exercises necessary for a healthy life, exercises tailored for this category of patients.

### **Exercises**

Toning the extensor flexor muscle groups and of the elbow: Isometric contractions, alternating left-right, subsequent simultaneously;

-Maintaining, but also trying to increase joint mobility in the joints: elbow flexion bilateral triple achievement-extensions (fist-elbow-shoulder), originally from the right upper limb, later to the left; this is done initially passive, and then active. You can try and oppose a minimum resistance.

-Toning knee extensor muscle groups, especially the quadriceps: Isometric contractions, initially at the level of the quadriceps muscle, then at the right level subsequently left quadriceps, at the same time.

Triple flexion-extension-active at the level of the affected limb, in preparation for thus lower limb we operated to support the weight of the body when it will move to re-educate with orthostatism and to the achievement of the first stages of walking;

-Flexion-extension of the ankle joint and the left hip (with the knee extended), passive, later passive-active, with the aim of preparing both his left leg, and the catchment area for motion;

- Foot pedaling movements, very important for the realization of walking;

- Walking with the help of the frame, with progressive loading of the affected limb; ideal viewing of walking in the mirror;

exercises at the climbing frame: with supportive hands on the climbing frame and support on the lower limb, do curls-extensions of the affected knee;

- Without support, under the supervision of the physical therapist;

easy, permanent mobilization of all joints; It is preferable for the active mobilization and even minimal active resistance;

- Practice of therapeutic swimming;

- Travelling huge distances and not at a pace slightly; as is indicated on the second half of the route to use a crutch on the side of the limb in order not to overburden the operated knee.[9]

### **Conclusions**

Research results supports the hypothesis postulated, respectively the overall health of hemophilic patients is lower than that of valid individuals.

As it can be seen, hemophilia affects every person. For this reason a program for a healthy lifestyle is imposed as to increase the quality of life.

People with coagulation disorders live all around the value of world. Professionals from hemophilia centers play an important role in the critical moments from the patients' lives, giving them the essential tools to help them improve their lives, to actively participate to treatment and to be able to manage the disease.

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