

## Self-efficacy for weight control and quality of life in Mexican patients with hemophilia

Autoeficacia para el control de peso y calidad de vida en pacientes mexicanos con hemofilia

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### ABSTRACT

**Introduction:** Perceived self-efficacy is closely related to an adequate quality of life en general well-being of people, but few studies have studied this relationship in people with hemophilia.

**Objective:** To determine the degree of relationship between perceived self-efficacy for weight control and quality of life in people with and without hemophilia, comparing both variables in case-control groups.

**Methods:** The sample made up, for convenience, of 40 participants, with two matched groups. The group of cases consisted of 20 males between 19 and 24 years of age ( $M = 19.50$ ,  $SD = 1.47$ ) with hemophilia type A. The control group consisted of 20 males who did not present hemophilia, matched in age and weight status, between the ages of 18 and 24 years of age ( $M = 19.59$ ,  $SD = 1.44$ ). Participants answered the “Self-efficacy for Weight Control” questionnaire and the World Health Organization Quality of Life Bref” questionnaire. *Descriptive statistics* where used to describe the factors of each instrument. Student's t-test was used to compare differences between the two groups.

**Results:** Only the Daily physical activity dimension showed a statistical difference in the control group. According to the Pearson correlation, a positive correlation was found between the Scheduled physical activity, Daily physical activity and Physical health dimensions.

**Conclusions:** It is concluded that physical exercise, weight control, nutritional counseling and psychological support are essential for the quality of life, especially for people with hemophilia, which complements medical treatment.

**Keywords:** hemophilia A; self efficacy; body weight; obesity; quality of life.

## RESUMEN

**Introducción:** La autoeficacia percibida está estrechamente relacionada con una adecuada calidad de vida y el bienestar en general de las personas, pero pocos estudios han analizado esta relación en personas con hemofilia.

**Objetivo:** Determinar el grado de relación entre la autoeficacia percibida para el control de peso y la calidad de vida en personas con y sin diagnóstico de hemofilia, comparando ambas variables en grupos caso-control.

**Métodos:** La muestra por conveniencia estuvo compuesta por 40 participantes, clasificados en dos grupos. El grupo de casos estuvo constituido por 20 varones entre 19 y 24 años de edad (M= 19,50, DE= 1,47) con diagnóstico de hemofilia tipo A. El grupo control estuvo formado por 20 varones que no presentaban hemofilia, pareados en edad y peso, con edades entre 18 y 24 años (M= 19.59, DT= 1.44). Todos los participantes respondieron el “Cuestionario de Autoeficacia para el Control de Peso” y el “Cuestionario Breve de Calidad de Vida de la Organización Mundial de la Salud”. Se obtuvieron análisis descriptivos mediante medias y desviaciones estándar sobre los factores de cada instrumento. Se utilizó la prueba t de Student para la diferencia de medias.

**Resultados:** Se hallaron diferencias entre el grupo de casos y controles solo en la dimensión Actividad física cotidiana a favor del grupo controles. De acuerdo a la correlación de Pearson, se encontró una correlación positiva entre la dimensión Actividad física programada, Actividad física cotidiana y Salud física.

**Conclusiones:** Se constata que el ejercicio físico, el control de peso, la asesoría nutricional y el apoyo psicológico son indispensables para la calidad de vida, en especial de las personas con hemofilia, lo cual complementa el tratamiento médico.

**Palabras clave:** hemofilia A; autoeficacia; peso corporal; obesidad; calidad de vida.

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## Introduction

Hemophilia is a hereditary chronic illness causing several hemorrhagic problems and chronic pain. The situation worsens if the patient is over-weight or obese.<sup>(1)</sup> Weight-gain causes an increase in mechanical tension in joints, producing internal hemorrhaging, which means patients can use up to 25% more antihemophilic concentrates of factor VIII or IX than normal weight patients.<sup>(2,3)</sup>

The psychological factors most present in these patients are: chronic stress, low self-esteem and depression.<sup>(4)</sup> Patients with hemophilia experience different mood levels due to the fact that some of the bleeding happens spontaneously and without warning, which consequently brings physical pain and changes in their state of mind.<sup>(5,6,7,8)</sup>

Perceived self-efficacy is defined by *Bandura* as the judgement of each individual over his/her capacity, based upon which he/she will organize and apply his/her actions to allow the desired performance.<sup>(9)</sup> Expectations about self-efficacy are important in order to understand how a patient with this illness generates an intent which is later translated into an attitude and it has been applied in various situations where self-efficacy is assigned a predictive value to establish risk-prevention behavior.<sup>(10,11)</sup>

There is scientific evidence that beliefs in perceived self-efficacy can help forecast levels of physical activity in people with hemophilia, which contributes to controlling and maintaining weight.<sup>(12,13,14)</sup>

Perceived self-efficacy has been studied as a complementary factor for treatments in weight reduction and weight control, for it is a construct that explores individual beliefs with respect to their capacity to maintain a healthy weight.<sup>(15,16,17)</sup>

People with hemophilia are found in studies to have low scores in health-related quality of life (HRQoL) compared with general male population,<sup>(18)</sup> and this impacts how satisfied they are with life,<sup>(19)</sup> their self-image,<sup>(7)</sup> and their attitude towards the illness and treatment.<sup>(6)</sup> At the same time, patients with this illness have been shown to put effort into increasing their levels of self-efficacy to take their treatment and maintain good physical health in order to improve their HRQoL.<sup>(9)</sup>

Given that this illness has not been studied much in Mexico, empirical evidence is required that will enable the implementation of strategies for weight control in favor of these patients' wellbeing.

Although it is true that the associations between these two variables also occur in people who, without any apparent circumstance in which their health is compromised, have a low HRQoL

and not necessarily people with chronic diseases. However, starting a preliminary comparison between the physically healthy general population and people with hemophilia will allow us to see if this disease affects HRQoL.

Based on the above, this study's objective is to determine the degree of relationship between perceived self-efficacy for weight control and HRQoL in people with and without hemophilia, examining both variables in case-control groups. Thereby the following hypothesis can be put forth: eating styles and externality, along with scheduled and daily physical activity can be associated with scores of both physical and psychological health, social relations and the environment surrounding Mexican hemophilia patients. The level of significance was established as 5 % (.05). This data serves to amplify the knowledge about the attitude with respect to the Mexican hemophilia patient's illness through the study of self-efficacy for weight control and HRQoL.

## **Methods**

### **Study design**

This was a cross-sectional and correlational cases and controls study, conducted with a non-probabilistic sample divided for convenience into two paired groups according to age and weight status. This type of sampling was chosen due to the unavailability of patients.

### **Ethical considerations**

This research makes up part of a major project which is registered in the Autonomous University of the State of Mexico (UAEM, by its Spanish acronym), and approved by the Research Ethics Committee of the Autonomous University of Baja California (UABC).

The study was conducted at a hemocenter from the Hemophilia Association of the Californias, A.C., in the municipality of Tijuana, Mexico, with the authorization of the *Hemophilia Federation of the Republic of Mexico*.

### **Participants**

*The sample size was obtained by an estimate based on the total of registered patients at the hemocenter from the Hemophilia Association of the Californias, A.C.*

A total of 28 adult patients with hemophilia registered at the hemocenter were invited to participate in the study according to the following eligibility criteria: males aged 18 or older, who

showed confirmatory diagnosis of hemophilia type A or B treated with prophylactics and those who presented no serious injuries or bleedings.

Patients from the three levels of hemophilia were included: mild, moderate and severe. From the 28 eligible patients, 6 declined to participate and 2 did not *meet eligibility criteria, so that the sample of patients represented the 71 % of the total.*

The resulting sample consisted of the following: the group of cases consists of 20 patients diagnosed with hemophilia type A, ages range from 19 to 24 years ( $M= 19.50$ ,  $SD= 1.47$ ), and the control group consists of 20 male university students from the UABC, between ages of 18 and 24 years ( $M= 19.59$ ,  $SD= 1.44$ ) that present no hemophilia nor any blood coagulation disorder.

## **Instruments**

### **SEWC Questionnaire**

The questionnaire consists of 37 items drafted as statements and is divided into 3 factors: Dietary style and externality, Scheduled physical activity and Daily physical activity. The SEWC questionnaire demonstrated sufficient evidence of reliability (Cronbach's alpha of 0.88) and valid (explained 54.85 % of the total variance) for assessing self-efficacy for weight control in Mexican population.<sup>(20)</sup>

### **WHOQOL-BREF Questionnaire**

The instrument comprised of 26 items drafted in the form of questions about the individual's health perception itself during the last two weeks and is divided in four factors: Physical health, Psychological health, Social relations, and Environment. The Spanish version of the WHOQOL-BREF questionnaire shows adequate psychometric properties for Mexican population (Cronbach's alpha was 0.90 and variance explained by the instrument was 46 %).<sup>(21)</sup>

### **Weight status**

Anthropometric measurements such as weight and height were obtained using a Tecnocor 180-LM stadiometer with weighing scale. In order to classify the participants, the Body Mass Index is used. According to the World Health Organization (OMS), normal weight corresponded to an IMC of 18.5 to 24.9 kg/m<sup>2</sup>, overweight from 25 to 29.9 kg/m<sup>2</sup> and obesity is comprised of a higher or equal value to 30 kg/m<sup>2</sup>.<sup>(22)</sup>

## Procedure

The sample was collected from June to December 2019. The data collection was carried out in the waiting room of the hemocenter from the Hemophilia Association of the Californias, A.C., with prior authorization from the president of said institution. The main researcher was present during the compilation of data, emphasizing the confidential nature of these, informing participants of the study's objective and requesting the subjects' voluntary and anonymous participation, responding to the two questionnaires and provide their anthropomorphic metrics. All participants gave their informed consent. The application of these instruments lasted approximately 20 minutes, including taking their anthropometric measurements.

## Statistical analysis

*In order to analyze the data, SPSS software version 21 was used. Normality was checked using the Shapiro-Wilk test ( $p > .05$ ), which showed that data from both instruments follow normal distribution. Mean and standard deviations were obtained to evaluate the HRQoL and self-efficacy for weight control. Student's t-tests was used to compare means and find whether there were significant statistical differences between both groups. A Pearson correlation analysis was used for each sample.*

## Results

Regarding weight status according to BMI, it was found that most individuals have normal weight (60 %) and few are obese (40 %) in both groups.

When comparing the score obtained for self-efficacy of weight control and HRQoL from the case and control groups (Table1), one can observe that the means ( $M$ ) for self-efficacy for weight control factors do not show a significant statistical difference, except for the Daily physical activity ( $p = .010$ ), which was lower in the case group. Moreover, in the averages for quality of life, Social relations ( $p = .030$ ) and the Physical health ( $p = .016$ ) factors show a significant statistical differences, resulting in a lower score in the control group. Finally, item 1 measuring general perception of quality of life s a significant statistical differences ( $p = .025$ ) between both groups.

**Table 1** - Comparison between self-efficacy and quality of life scores among cases and controls

Factors	Cases		Controls		df	t	p	Cohen's d
	M	SD	M	SD				
<b>Self-efficacy for weight control</b>								
Dietary styles and externality	61.85	10.25	58.60	8.29	38	1.1	0.277	0.36
Scheduled physical activity	24.15	5.63	25.50	4.88	38	-0.81	0.423	0.26
Daily physical activity	22.65	6.14	26.85	3.20	38	<b>-2.71</b>	<b>0.010</b>	<b>0.88</b>
<b>Quality of life</b>								
Physical health	59.57	10.07	72.57	12.89	38	<b>-2.23</b>	<b>0.016</b>	<b>0.89</b>
Psychological health	76.50	11.47	71.00	15.56	38	1.27	0.211	0.41
Social relations	79.00	15.79	67.00	17.77	38	<b>2.26</b>	<b>0.030</b>	<b>0.73</b>
Environment	72.63	12.13	68.63	10.59	38	1.11	0.273	0.36
General perception of quality of life	54.00	10.61	72.00	10.25	38	<b>2.75</b>	<b>0.025</b>	<b>0.83</b>
General perception of health	58.00	21.42	66.00	16.02	38	-1.34	0.189	0.43

Note: Independent Samples t-test was used to compare the means between cases and controls.

M= Mean, SD= Standard Deviation, df= Degrees of Freedom

According to the Pearson correlation analysis for the case group (Table 2), a positive correlation was observed between the Daily physical activity factor in the self-efficacy scale for weight control, and the factors for quality of life: Physical health, Psychological health and Social relations. There was also a positive correlation between the Scheduled physical activity factor for the self-efficacy scale for weight control, and the Physical health for quality of life factor. Finally, the same factor was positively correlated with General perception of quality of life and health.

For the control group there was a positive correlation between the factors Dietary style and externality for the weight control self-efficacy scale, and the Quality of life factors Social relations and environment. The factor Physical activity positively correlated with the Quality of life factors Physical and environmental health. There was a positive correlation between the Scheduled physical activity factor and the Quality of life Environment factor. Finally, the factors Dietary styles and externality and Daily physical activity were positively correlated with General perception of quality of life.



**Table 2 - Intercorrelations for scores of self-efficacy and quality of life measures**

Measure	1	2	3	4	5	6	7	8	9
1. Dietary styles and externality	--	0.37	0.50*	0.20	-0.02	0.49*	0.46*	0.52*	0.06
2. Scheduled physical activity	0.19	--	0.28	0.36	0.01	0.11	0.41*	0.34	0.05
3. Daily physical activity	0.11	0.46*	--	0.44*	-0.23	0.13	0.55*	0.49*	-0.13
4. Physical health	- 0.31	0.63**	0.61**	--	0.68**	0.44	0.32	0.33	0.37
5. Psychological health	0.14	0.32	0.59*	0.75**	--	0.52*	0.23	0.09	0.59**
6. Social relations	0.03	0.39	0.51*	0.66**	0.83**	--	0.43	0.42	0.55*
7. Environment	- 0.15	0.09	0.03	0.40	0.51*	0.50*	--	0.66**	0.24
8. General perception of quality of life	- 0.12	0.50*	0.41	0.41	0.29	0.50*	0.44	--	0.09
9. General perception of health	- 0.01	0.51*	0.39	0.42	0.40	0.53*	0.35	0.61**	--

Note: Intercorrelations for cases (n= 20) are presented below the diagonal, and the intercorrelations for controls (n= 20) are presented above the diagonal. \*\* The correlation is significant at the level 0,01 (bilateral). \* The correlation is significant at the level 0,05 (bilateral).

## Discussion

This research began with the interest to determine the degree of relationship that exists between perceived self-efficacy for weight control and HRQoL in people with and without hemophilia, making comparisons of these variables in case and control groups. The cases were patients with hemophilia and controls were college students without hemophilia or other blood clotting disorders.

Comparing the levels of self-efficacy of weight control and HRQoL of both groups allowed to observe that the low self-efficacy scores for daily physical activity in the group of cases also confirms the relationship between physical health and the psychological factors that influence patient's performance in specific tasks that requires physical effort.<sup>(4,7,10)</sup> On the other hand, Social relations are significantly higher in hemophilia patients compared to the control group. This may be due to the confidence and trust to their prophylactic treatments and also having the support from their health care providers, family and the hemocenter which they belong.<sup>(23)</sup>

Regarding the research hypothesis that the 3 factors included in the SEWC questionnaire are associated with the 4 factors into which the questionnaire is divided WHOQOL-BREF, the results of this study partially confirms this association, found specifically among factors that refer



to hemophilia patients' physical activity, their physical and psychological health, and social relations. It is important to point out that the results of this study only pertain to the population that was studied and cannot be extrapolated to other populations.

Similar results were found in other studies conducted like those of *Hogea*, and *Nussbaum*, in which cases and controls were used in Rumania and WHOQOL-100 was implemented, finding a significant statistical difference in subjects presenting hemophilia, and a lower quality of life in relation to the general perception of quality of life, compared to the subjects that did not present hemophilia.<sup>(24)</sup>

*Another study* conducted by *St-Louis* and others among youth and young adults from Canada showed similarities in their findings on which the youth population that were treated with prophylactics reported significantly less body ache, better health in general and significantly higher scores in physical functions, mental health and social relations, according to the Haemo-QoL-A and the SF-36, however, age and prophylactic treatment correlated negatively with patients' HRQoL.<sup>(25)</sup>

A study conducted in Saudi Arabia by *Allhaidan* and others, applied the Haemo-QoL-A questionnaire and the results showed that, is the severity of the disease that leads to poor HRQoL and not necessarily the prophylactic treatment.<sup>(26)</sup> However, self-efficacy is not part of any of these studies.

*Goto*, *Takedani*, *Yokota* and *Haga* have conducted several studies related to HRQoL in patients with hemophilia and the evaluation of adequate physical activity for health care reasons.<sup>(27)</sup> Their findings show the difficulty that hemophilia patients have, maintaining physical activity routines due to factors like aging, fear of developing bleeding, limited awareness about the benefits of exercising, and the psychological problems that this causes.

Psychological factors are not considered in most of the research about hemophilia patients, but giving this situation. *Beiranvand* and others, proposes the topic of positive thinking training for hemophilia patients to improve adherence to prophylactic treatment, control chronic pain and improve their positive relationship with themselves and others.<sup>(9)</sup>

Also, hemophilia patients need to take care to understand the benefits and risks of practicing sports. For those patients that present difficulty in beginning to practice physical activity, it is important to administer prophylactic treatment before the patient begins the activity and implement strategies designed to promote healthy conducts to improve their HRQoL.<sup>(28)</sup>

These findings demonstrate an association between physical health and self-efficacy when performing daily physical activity such as going up and down a flight of stairs, and walking in a fast and prolonged manner. It is known that quality of life is a multifactorial construct<sup>(29)</sup> and

depends on circumstances that impact on the perception of people's physical, psychological, emotional and social health, in such a way that not only the people who have hemophilia or another type of chronic disease may have a low HRQoL. However, the fact that a person with or without hemophilia has a poor HRQoL does not mean that things cannot improve, as long as the person is functional, they can be supported in the most appropriate way.

For future research in this subject matter, widening the sample should be a consideration because this study was limited due to the conditions of accessing the population being studied. Hence, it is important to consider the possibility of designing a longitudinal study in order to analyze the relation between self-efficacy for weight control and HRQoL in hemophilia patients. This will allow following up with patients and include other variables like personality, depression and stress, which should be linked to the ones in this study. One recommendation is to utilize the information obtained in this study to establish actions which can lead to improvements in HRQoL for patients with this illness, promoting a positive thinking about their prophylactic treatment, the nutritional care and self-efficacy for weight control.

This study contributes scientific evidence that confirms the relationship between perceived self-efficacy for weight control and HRQoL in people with hemophilia. To increase the quality of life of people with hemophilia, it is necessary to provide comprehensive care that includes physical exercise on a regular basis *using prophylactic treatment*, have adequate weight control, have nutritional counseling and *receive psychotherapy*.

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### Conflict of interests

The authors have stated that they had no conflicts of interest associated with this research.

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