

# Physically active patients in hemodialysis: do they have a different eating pattern and body composition?

**Cristina Garagarza**, MSc.<sup>1,4</sup> **Ana Valente** MSc.<sup>1</sup>, **Cristina Caetano**, BSc.<sup>1</sup>, **Inês Ramos**, MSc.<sup>1</sup>, **Joana Sebastião** BSc.<sup>1</sup>, **Mariana Pinto**, BSc.<sup>1</sup>, **Telma Oliveira**, BSc.<sup>1</sup>, **Aníbal Ferreira**, PhD.<sup>2,3</sup>, **Catarina Sousa Guerreiro**, PhD<sup>4</sup>

<sup>1</sup> **Nutrition Department**, Nephrocare, Lisboa, Portugal

<sup>2</sup> **Nephrology Department**, Dialysis Unit Vila Franca de Xira, Portugal

<sup>3</sup> **Faculdade de Ciências Médicas**, Nova Medical School, Lisboa, Portugal

<sup>4</sup> **Laboratório de Nutrição**, Faculdade de Medicina, Universidade de Lisboa, Portugal.

## Introduction

In hemodialysis patients:

- Body composition influences outcome;
- Specific nutritional recommendations;
- Physical activity is highly encouraged.

The **aim** was to evaluate if there are differences in body composition and dietary patterns between physically active and no physically active HD patients.

## Methods

- Multicenter cross-sectional study with **582 HD patients** from **38 dialysis centers**;
- Clinical parameters and body composition analysis were registered;
- Dietary intake (Food Frequency Questionnaire) and physical activity habits (International Physical Activity Questionnaire) were obtained;
- For the analysis, patients were divided: physically active (PA), if they follow the WHO recommendations and no physically active (NPA).

## Results

- Mean age: 67.8 ± 17.7 years
- 41.4% were female
- 31.6 % had diabetes mellitus
- Median HD vintage: 65 (IQR:43-104) months

**Table 1. Clinical and biochemical parameters** differences among PA and no PA patients

Parameter	PA patients (n=116)	NPA patients (n=465)	P
Age (years)**	61.1±12.7	69.4±13.5	<0.001
HD vintage (months)*	61.5(41.3-100.3)	67(43-104)	0.461
Urea pre (mg/dL) **	131±28	122±33	<b>0.013</b>
Interdialytic Weight Gain (%)*	3.3(2.6-4.3)	3.1(2.3-4.0)	0.102
nPCR**	1.25±0.23	1.16±0.26	<b>0.009</b>
Potassium**	5.2±0.7	5.33±0.67	0.316
Phosphorus**	4.4±1.2	4.26±1.15	0.140
Creatinine*	8.5(7.0-10.1)	7.3(6.1-8.7)	<0.001
Albumin*	4.1(4.0-4.3)	4.0(3.9-4.2)	<b>0.026</b>
Δ6 months-weight (Kg) **	0.3±2.2	-0.1±2.1	<b>0.047</b>
Age Adjusted Charlson CI*	5(3-6)	6(5-8)	<0.001

\*Median (IQR: Interquartil Range); \*\*Means±SD. ; Legend: nPCR – normalized Protein Catabolic Rate; Ca/P product – Calcium/Phosphorus Product

**Table 2. Differences in energy and macronutrients intake and body composition** between PA and no PA patients.

Parameter	PA patients (n=116)	NPA patients (n=465)	P
Energy (Kcal/Kg)*	28.0(21.1-38.6)	26.2(20.2-32.7)	<b>0.024</b>
Protein/Kg*	1.18(0.90-1.66)	1.08(0.83-1.08)	<b>0.014</b>
Protein (g/day)*	82(61-111)	74(58-96)	<b>0.016</b>
Carbohydrates (g/day)*	255(179-319)	238(185-287)	0.07
Total Fat (g/day)*	63(46-85)	56(44-76)	<b>0.023</b>
Omega-3 fatty acid (g/day)*	1.02(0.77-1.41)	0.90(0.69-1.21)	<b>0.006</b>
OH/ECW (%)*	6.0(2.7-11.9)	7.4(2.8-11.8)	0.445
TBW (L)*	36.3(30.0-40.8)	32.8(29.3-37.2)	<b>0.027</b>
ECW (L)**	16.8±2.9	16.3±2.7	0.075
ICW (L)*	18.8(15.1-21.1)	16.7(14.6-18.8)	<b>0.002</b>
LTI (kg/m <sup>2</sup> )*	13.5(11.5-15.8)	12.1(10.5-13.6)	<b>0.002</b>
FTI (kg/m <sup>2</sup> )*	12.0(9.0-15.5)	13.5(10.0-17.0)	0.052
BCM (Kg)*	20.9(15.5-25.1)	17.2(13.7-20.9)	<b>0.001</b>
Body Mass Index*	25.5(22.8-28.7)	25.9(22.5-29.3)	0.584

\*Median (IQR: Interquartil Range); \*\*Means±SD. Legends: OH/ECW – overhydration/extracellular water; TBW – Total Body Water; ECW – Extracellular Water; ICW – Intracellular Water; LTI – Lean Tissue Index; FTI – Fat Tissue Index; BCM – Body Cell Mass.

## Physically active patients

- Younger;
- Higher urea pre-dialysis, albumin, creatinine and 6 months weight gain;
- Lower age-adjusted Charlson comorbidity index.
- Higher energy, protein, total fat and omega 3 fatty acids intakes.
- Higher total body water, intracellular water, lean tissue index, body cell mass.

## Conclusion

Differences were observed in body composition and clinical parameters related to a **better nutritional status in PA patients**. **PA patients` dietary intake was more approximated to the existing recommendations** for this population, namely for **energy and protein daily intake**.