

# INFLUENCE OF HYDRATATION STATUS AND FAT MASS ON BMI IN CKD PATIENTS

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**Body Mass Index (BMI):** measure of classification of the patient's weight status.

According with the results, the patient classification is according with this table:

It's calculated by: 
$$BMI = \frac{Weight(Kg)}{Height(m)^2}$$

We have to know that this measure only use weight and height and it does not use the free fat mass, fat mass (FM) or the hydration status.

BMI (Kg/m <sup>2</sup> )	Diagnose SEEDO
< 18,5	Low weight
18,5 - 24,9	Normal weight
25 - 29,9	Overweight
> 30	Obesity

**AIM.** Value the influence over the hydration status and FM by Bioimpedance-Vector in the BMI in CKD patients

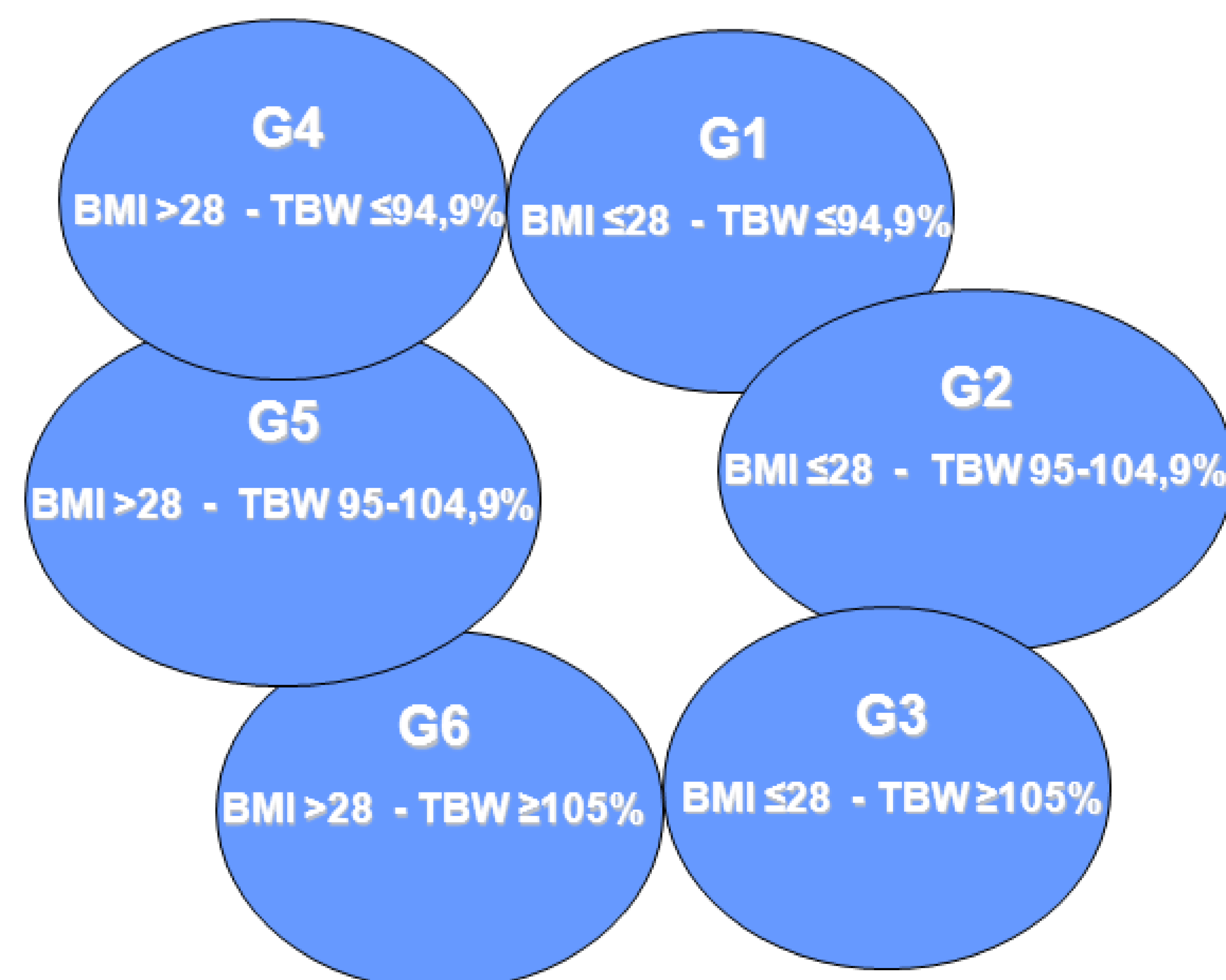
**Methodology.** The patients were evaluated using bioimpedance BIA-vector 101(Akern-JRL System)

281 CKD patients	134 males	68 females
<b>Age</b>	70,91 ± 11,83 y	69,96 ± 16,00 y
<b>Weight</b>	78,43 ± 13,97 Kg	64,95 ± 14,58 Kg
<b>BMI</b>	27,45 ± 4,60 (Kg/m <sup>2</sup> )	26,97 ± 6,13 (Kg/m <sup>2</sup> )
<b>CKD-EPI</b>	18,54 ± 9,59 ml/min/1,73m <sup>2</sup>	21,14 ± 9,96 ml/min/1,73m <sup>2</sup>
<b>nPNA</b>	0,94 ± 0,23 gr/kg/day	0,90 ± 0,28 gr/kg/day
<b>xTotal Body Water</b>	56,46 ± 5,30%	49,43 ± 7,38%
<b>X% Ideal body water</b>	97,14 ± 9,14%	88,83 ± 13,30%
<b>x IntraCellular water</b>	43,40 ± 8,73%	43,10 ± 9,44%
<b>xFat mass</b>	28,07 ± 7,70%	37,13 ± 10,19%
<b>xMuscle Mass</b>	34,39 ± 8,73%	31,88 ± 7,00%
<b>xAlbumin</b>	4,15 ± 0,43	4,15 ± 0,42
<b>xCRP</b>	0,92 ± 1,50	0,4 ± 0,59

- 1.- We considered over weight if BMI >28Kg/m<sup>2</sup> and overhydration considering the % TBW respect the ideal TBW according to age.
- 2.-The classification was according ideal % of TBW and age;
  - Overhydration patients TBW>105%,
  - Normohydration between 95 and 104,9% and Low-hydration if TBW<94,9%.
- 3.- According to BIVA we considering obesity if FM >30% in females and males >22% (Global-30% over the age).
- 4.- We have created 6 groups the patients according to BMI and TBW.

## Results.

Group	Gender	Fat Mass		
		< 22%	22,1 - 30%	> 30%
G1	Male	0,75%	2,25%	15,7%
	Female	-	5,9%	28%
G2	Male	6%	19,5%	2,25%
	Female	1,5%	5,9%	5,9%
G3	Male	14,2%	3%	-
	Female	4,4%	10,3%	-
G4	Male	-	1,5%	23,1%
	Female	-	-	38,2%
G5	Male	0,75%	7,5%	2,25%
	Female	-	-	-
G6	Male	3%	-	-
	Female	-	-	-



In both sex the higher percentage presents BMI >28 and %TBW ≤94,9 (G4) and percentage of FM > 30%

In both sex appeared a high percentage of BMI ≤28 and %TBW≤94,9% (G1), however has a high FM percentage >30%

A 3% of the males presents a high BMI secondary to hiperhydratation (G6), with FM less than 22%

The groups G5 and G6, we did not find any female patient.

## Conclusions.

1.- To assess BMI in CKD patients, the state of hydration must be taken into account. A high BMI is a diagnosis of overweight or obesity when the patient with CKD is normohydrated.

2.-It's advisable to evaluate FM to diagnose overweight and obesity, There are different patterns between males and females.