# DIALYSIS ADEQUACY AND NUTRICIONAL STATUS OF HEMODIALYSIS PATIENTS

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## INTRODUCTION AND OBJECTIVE

The appropriate dose of dialysis is crucial to maintain a good nutritional status and the nutritive status has significant role in improving the quality of life of dialysis patients. The **aim** of this study was to find out if there is any correlation of the anthropometric parameters and markers of nutrition with the hemodialysis adequacy.
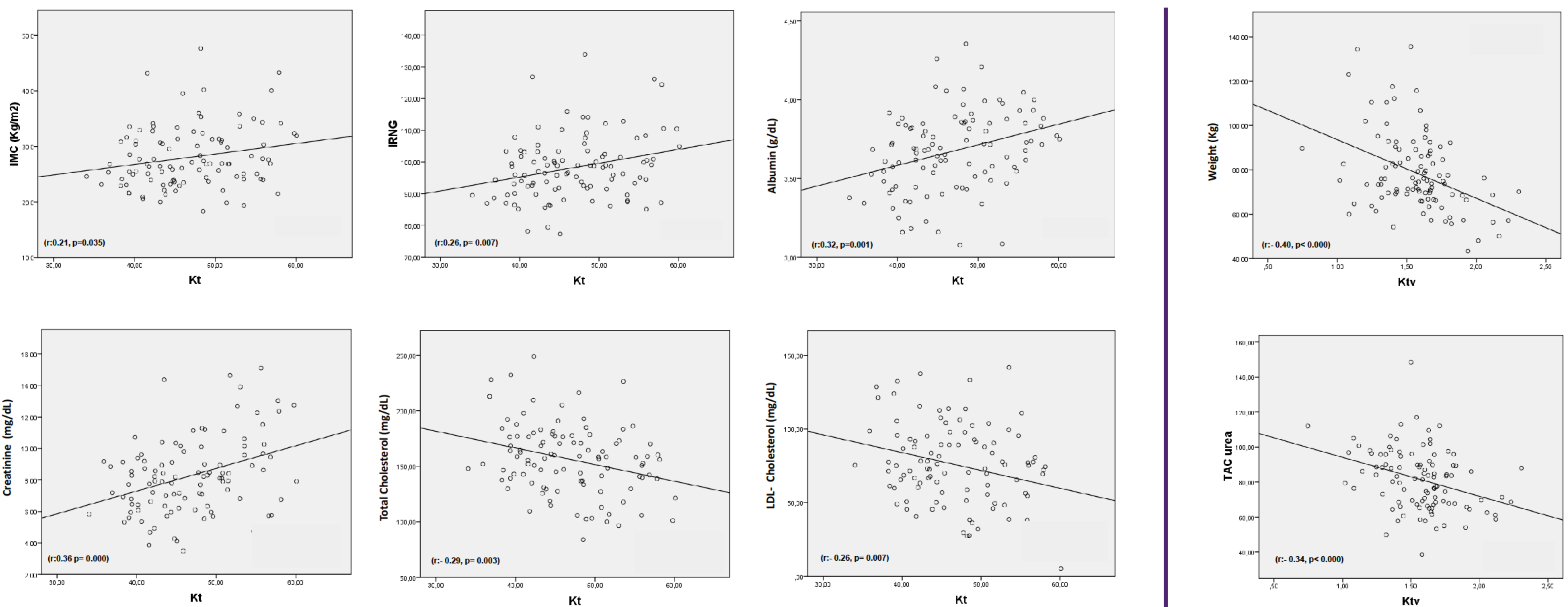
## MATERIAL AND METHODS

- **Retrospective** study.
- N: **103 patients.**
- **Convencional hemodialysis** (3 times/week).
- Patients were allocated into 2 groups according to **Kt/v Daugirdas** 2nd generation (optimum: Kt /v ≥ ♂:1.3 / ♀:1.6  - inadequate: Kt/v < ♂:1.3 / ♀:1.6) and **Kt** (optimum: Kt ≥ ♂: 50 / ♀: 45L - inadequate: Kt < ♂: 50 / ♀: 45L).
- Demographic, clinical, anthropometric (BMI), biochemical nutritional markers (total protein, albumin, pre-albumin, total cholesterol) and other laboratory parameters were analyzed and related to dialysis dose reached.
- We used the **geriatric nutritional risk index** to assess nutritional status (GNRI = [14.89 x albumin (g/L)] + [41.7 x (body weight/ideal weight)].

## RESULTS

| Demographics and Clinical characteristics | Patients  n= 103 |
|---|---|
| Age (years) median  SD | 62   12 |
| Male (%) | 66 |
| Time on dialysis (months) median  SD | 54   42 |
| Diabetes (%) | 53,4 |
| Hypertension (%) | 87,3 |
| Cardiovascular disease (%) | 49 |
| IMC (kg/m²) median  SD | 28  5,5 ( 14% IMC<23) |
| Vascular acces  (FAV/catheter) (%) | 66 / 34 |
| ERC etiology: (%) | |
| - Diabetes | 54 |
| - Isquemic/Hypertension | 14,7 |
| - Chronic Glomerulonephritys | 4,9 |
| - Policystic kidney disease | 5,9 |
| - Undetermined | 6,9 |

| | Kt ≥ 45/50 L (n: 41) | Kt< 45/50 L (n: 62) | p | Ktv ≥ 1.3/1.6 (n: 82) | Ktv< 1.3/1.6 (n: 21) | p |
|---|---|---|---|---|---|---|
| Age (years) | 59,5 ± 10 | 64,9 ± 12,8 | 0.026 | 63 ± 12 | 60,7 ± 11 | ns |
| Gender ♂/ ♀ (%) | 69,2 / 30,8 | 64,1 / 35,9 | ns | 69 / 31 | 52,6 /47,4 | ns |
| Diabetes mellitus (%) | 41 | 60,9 | 0.049 | 50 | 68 | ns |
| HTA (%) | 82,3 | 90,6 | ns | 85,7 | 94 | ns |
| Cardiovascular disease (%) | 23,1 | 23,4 | ns | 27,4 | 21 | ns |
| Time on HD (meses) | 60 ± 38 | 50,5 ± 44 | ns | 58 ± 43 | 35,9 ± 29 | 0.011 |
| Vascular acces (FAV/catheter) (%) | 97,5 / 2,5 | 69,3 / 30,6 | 0.000 | 81,4 / 18,5 | 76,2 / 23,8 | ns |
| IMC (Kg/m²) | 29,8 ± 6,2 | 26,9 ± 4,7 | 0.015 | 26,8 ± 5 | 33,4 ± 5 | 0.000 |
| Creatinine (mg/dL) | 9,3 ± 2,4 | 7,5 ± 1,9 | 0.003 | 8,5 ± 2,3 | 8 ± 1,68 | ns |
| Total Cholesterol (mg/dL) | 146,95 ± 29,2 | 162,2 ± 32,1 | 0.015 | 154 ± 30,3 | 161 ± 36,9 | ns |
| Total Protein (g/dL) | 6,7 ± 0.3 | 6,7 ± 0.4 | ns | 6,7 ± 0,4 | 6,6 ± 0,4 | ns |
| Albumin (g/dL) | 3,75 ± 0,20 | 3,61 ± 0,26 | 0.028 | 3,69 ± 0,50 | 3,67 ± 0,23 | ns |
| Prealbumin (mg/dL) | 31 ± 6,1 | 29,5 ± 5,3 | ns | 30,2 ± 5,9 | 29,4 ± 4,8 | ns |
| GNRI | 101,1 ±9,7 | 92,2 ±9,8 | 0.018 | 97,1 ± 8,9 | 102 ±13 | ns |


(r:0.21, p=0.035) — IMC (Kgm2) vs Kt


(r:0.26, p= 0.007) — IRNG vs Kt


(r:0.32, p=0.001) — Albumin (g/dL) vs Kt


(r:- 0.40, p< 0.000) — Weight (Kg) vs Ktv


(r:0.36 p= 0.000) — Creatinine (mg/dL) vs Kt


(r:- 0.29, p= 0.003) — Total Cholesterol (mg/dL) vs Kt


(r:- 0.26, p= 0.007) — LDL - Cholesterol (mg/dL) vs Kt


(r:- 0.34, p< 0.000) — TAC urea vs Ktv

## CONCLUSIONS

1) We observed a positive correlation between the dialysis dose (Kt) and albumin concentration and a negative correlation between Kt and LDL cholesterol.
2) In patients with inadequate dialysis dose, GNRI show moderate to high.

- Nutrition parameters as hemodialysis adequacy markers.  Stolic R et al. Hippokratia 2010 Jul;14(3):193-7.
- Association between dialysis dose improvement and nutricional status among hemodialysis patients. Ahmad T. Azar et al. Am J Nephrol 2007; 27:113-119
- Haemodialysis prescription, adherence and nutritional indicators in five european countries: results from the dialysis outcomes and practice patterns study (DOPPS). Nephrl Dial Transplant 2004; 19: 100-107

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