

# PSYCHOLOGICAL ASPECTS OF THE COMPLIANCE TO LOW PROTEIN DIETS IN PRE-DIALYSIS CHRONIC KIDNEY DISEASE PATIENTS

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## BACKGROUND, STUDY DESIGN AND OBJECTIVE

- Low-protein diets (LPDs) were associated with better blood pressure control, decrease in proteinuria and amelioration of metabolic complications of Chronic Kidney Disease (CKD) [1-6], preserving the nutritional status in compliant patients [2,8].
- Their use was not extended so far, mainly because of the reported poor compliance [7], but the interest recently resurged. Psychological aspects of CKD patients could be involved in adherence and compliance, with impact on subjects selection and long-term compliance.
- This cross-sectional, single-center study aimed to evaluate psychological characteristics of CKD patients in relation with their compliance to LPDs (NCT 022173241).

## SUBJECTS AND METHODS

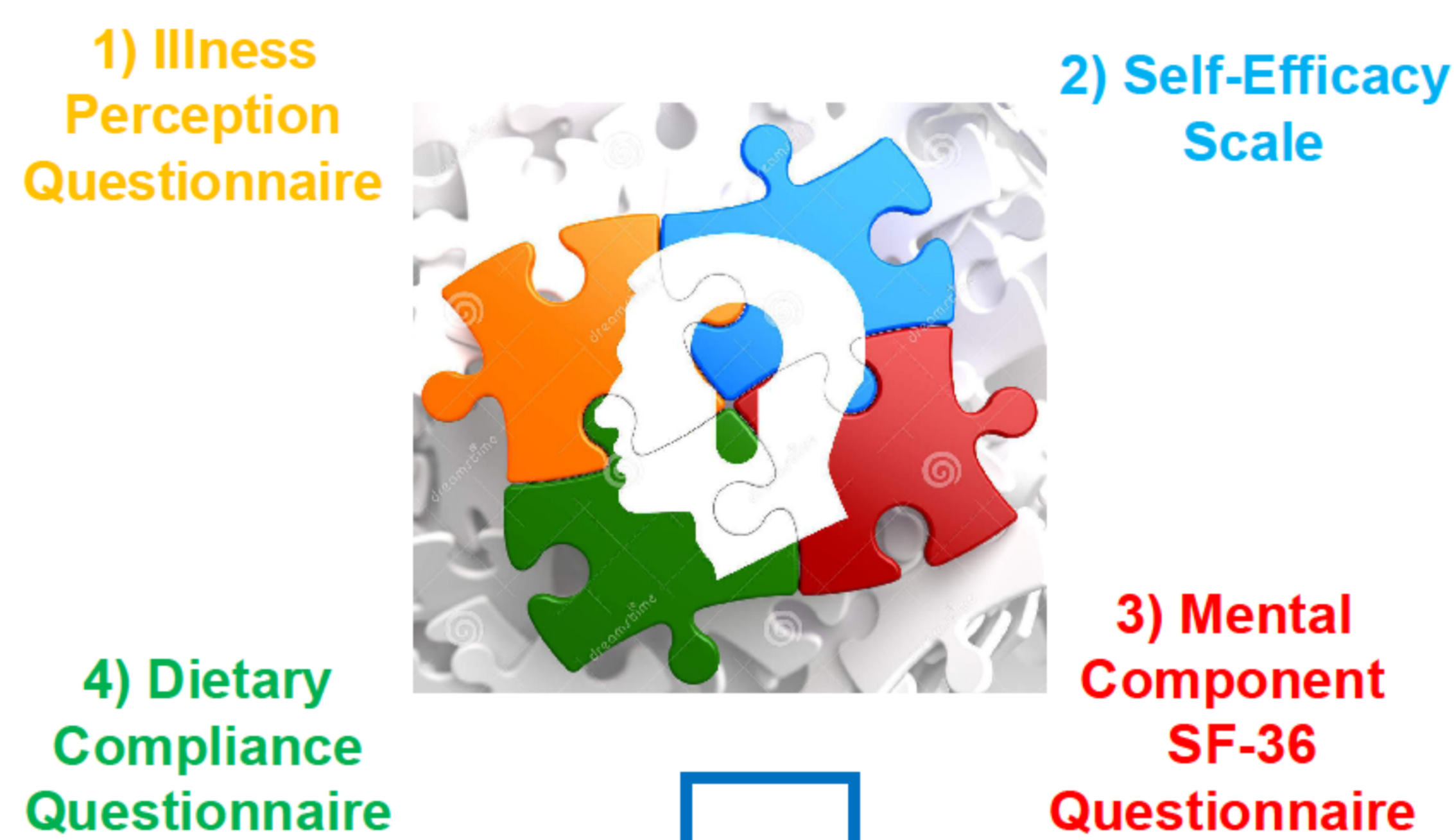
- **Subjects:**
  - All 112 consecutive adults, stage 4+ CKD (estimated GFR, 4-variable MDRD formula < 30 mL/min per year) following one of the dietary programs in the center with scheduled visits during 6 mo (2014, Jan 1–June 30) were enrolled.
- **Dietary interventions:**
  - **Ketodiet (KD):** vegetarian very LPD, 0.3 g/kg ideal bw per day supplemented with ketoanalogues of essential amino acids-Ketosteril®, 1 capsule/5 kg per day
  - **Conventional mixed low protein diet (LPD),** with 0.6 g/kg per day
- **Parameters:**
  - Efficacy: renal function, complications of CKD: regular monitoring schedule, according to the Best Practice Guidelines [9]
  - Safety: nutritional status, dietary compliance, adverse events
  - Psychological assessment
- **Psychological assessment:**
  - Performed by a single psychologist trained to care of CKD patients, independent of the medical team
- **Questionnaires (validated for Romanian language):**
  - Auto-efficacy scale
  - Illness perception questionnaire
  - Items related to mental component in Short Form 36 (SF-36) questionnaire
  - Diet-focused questionnaire.
- **Data analysis:**
  - Was performed on 88 subjects.
  - Data were compared between patients on **KD** and those on **LPD**.

## RESULTS

### Patients characteristics

- N=88
- Gender (males, %): 44
- Age (median, years): 57.6 (54.1-61.1)
- Level of kidney function: eGFR 22.2 (21.3-24.2) mL/min
- Underlying kidney diseases:
  - 32% primary glomerular
  - 30% vascular
  - 15% interstitial
  - 15% other kidney diseases
- Dietary intervention:
  - 56 on KD
  - 32 on LPD
- There were no differences between groups in age, gender or etiology of CKD

### Psychological evaluation



### Clinical differences between dietary groups

- There was a lower percentage of diabetics in the KD group (20 vs 44% in LPD; p=0.01).
- Subjects who proved compliant to KD had longer CKD duration [84 (48-108) vs 42 (24-60) mo; p=0.01], lower eGFR [20.3 (18.1-22.2) vs 24.5 (23.2-27.5); p<0.01] and poorer metabolic control, at the beginning of nutritional intervention:
  - higher serum urea [203 (181-224) vs 154 (129-177) mg/dL; p<0.01]
  - higher serum phosphates [5.6 (4.9-6.2) vs 4.3 (3.9-5.4) mg/dL; p=0.02],
  - lower serum bicarbonate [18.2 (17.4-18.5) vs 17.5 (15.9-18.4) mEq/L; p<0.01]
  - lower serum calcium [3.9 (3.8-4.0) vs 4.1 (3.9-4.2) mg/dL; p=0.01].

| Psychological dimension/score        | KD<br>n=56       | LPD<br>n=32      | P     |
|--------------------------------------|------------------|------------------|-------|
| <b>Illness Perception</b>            |                  |                  |       |
| Emotional impact of the disease      | 10 (9-12)        | 13,5 (11-16)     | <0.01 |
| Perceived control of the disease     | 1,8 (1,6-2,0)    | 2,7 (2,2-3,1)    | <0.01 |
| Perception of diet effectiveness     | 1,1 (0,9-1,3)    | 2,1 (1,7-2,5)    | <0.01 |
| Adéquate knowledge on CKD            | 35%              | 12%              | <0.01 |
| <b>Self efficacy</b>                 | 18.6 (17.3-19.8) | 16.4 (14.3-18.5) | 0.05  |
| <b>SF-36 Mental Component</b>        |                  |                  |       |
| Vitality score                       | 75 (70-75)       | 65 (55-75)       | 0.04  |
| Mental health score                  | 80 (76-80)       | 72 (64-76)       | 0.01  |
| <b>Dietary compliance</b>            |                  |                  |       |
| Marital satisfaction                 | 4.6 (4.4-4.8)    | 4.1 (3.9-4.3)    | 0.01  |
| Relationship with nephrologist       | 4.9 (4.8-5)      | 4.6 (4.4-4.7)    | 0.01  |
| Actual knowledge on disease and diet | 4.7 (4.3-5.1)    | 3.6 (2.7-4.5)    | <0.01 |
| Anticipated rate of success          | 8.3 (8.1-8.6)    | 6.8 (6.3-7.3)    | <0.01 |

Compliance to KD depended both on clinical factors, i.e. absence of diabetes mellitus, more advanced CKD, and psychological factors: greater marital satisfaction and better relationship with nephrologist.

| Variable                           | Beta | 95% CI of Beta | p     |
|------------------------------------|------|----------------|-------|
| Diabetes Mellitus                  | 0.10 | 0.20-0.53      | <0.01 |
| Prediet eGFR                       | 0.69 | 0.55-0.88      | <0.01 |
| Relationship with the nephrologist | 4.88 | 1.13-21.00     | 0.03  |
| Marital satisfaction               | 2.94 | 1.19-7.30      | 0.02  |
| Mental Health Score                | 1.07 | 0.99-1.16      | 0.05  |
| Constant                           | 0.00 | 0.00           | 0.07  |

Multivariable stepwise adjusted binary logistic analysis (Cox&Snell 0.17; p=0.01).  
Variables entered at step 1: Diabetes Mellitus, Prediet eGFR, Prediet Urea, Relationship with nephrologist, Marital satisfaction, Mental Health Score, Vitality Score, Self-Efficacy Score

## CONCLUSIONS

- **Non-diabetic patients, those with longer CKD duration, with lower renal function and poorer metabolic control are more prone to follow ketoanalogue supplemented very low protein diet.**
- **Psychological factors involving family and medical team seem to be involved in dietary compliance and should be considered during subjects selection and monitoring.**

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