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INTRODUCTION

- Mineral and Bone Disorder (MBD) is a frequent complication in chronic kidney disease (CKD).
- On the other hand, nutrition management is an important strategy for the treatment of CKD-MBD; however, taste disturbance is a common condition in CKD that could affect negatively to nutritional approach and worsening the CKD-MBD

- Taste test is not part of the routine nutritional assessment; and there is no published information in this regard.
- Objective:** To determine the association of altered taste perception in patients with CKD-MBD on dialysis.

PATIENTS AND METHODS

Cross-sectional analytic study

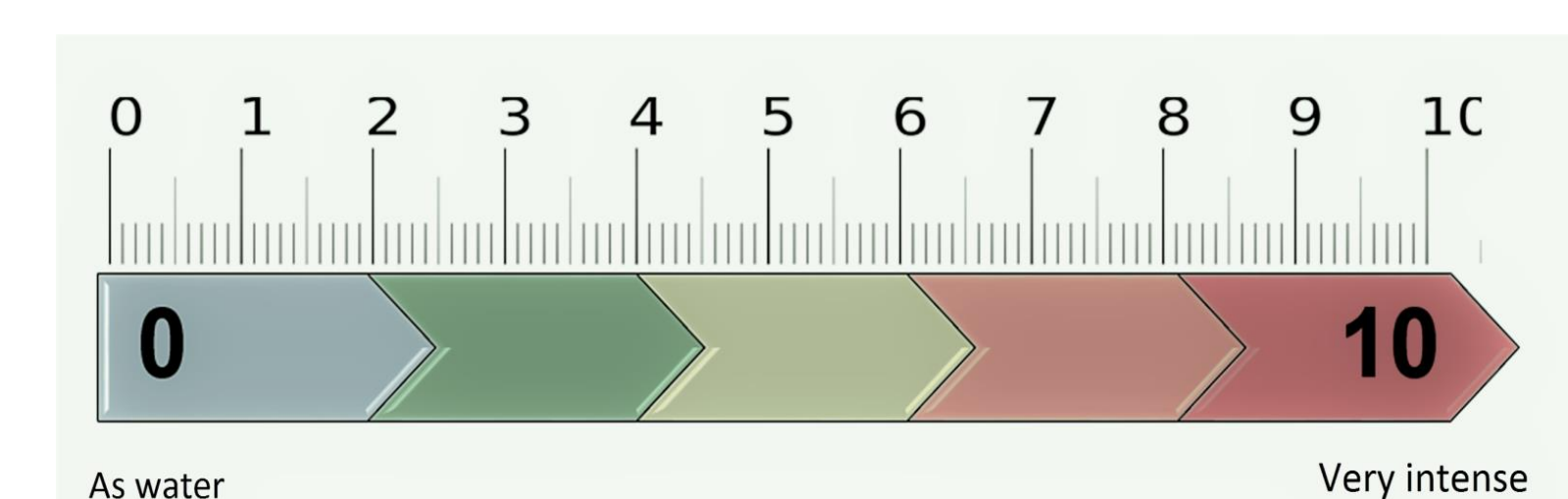
- We evaluated 74 patients with at least two months on dialysis; any age, gender type of dialysis cause of ESRD were included. Subjects with smoking habit, complete dental prosthesis, upper airway infections and allergy to glutamate were excluded.
- Identification of the five basic tastes (sweet, salty, sour, bitter and umami) were evaluated with Barcenás's paired taste test¹. The products and concentrations for the test are shown in Table 1.

Table 1. Products and concentrations for the preparation of the taste test

Taste	Product	Concentration
Sweet	Saccharose	2%
Salty	Sodium chloride	0.5%
Sour	Citric acid	0.1%
Bitter	Caffeine	0.06%
Umami	Monosodium glutamate	0.25%

- The taste test were performed with fasting of at least 4 hours. Each taste was tested randomly with 10 ml, patients were asked to mention the perceived taste. Altered taste perception was considered as the wrong identification of at least one taste.
- Additionally, taste intensity was evaluated using an analog visual scale, (Figure 1). Mouth rinsing with distilled water was indicated between each taste.
- Demographic, clinical, biochemical, and MBD variables were collected; vascular calcification (VC) was evaluated using Adragao's score. Nutritional status was evaluated with dialysis malnutrition score (DMS)
- Statistical analysis:** descriptive statistics, χ^2 and Mann Whithney U-test. A p value > 0.05 was consider significant.

Figure 1. Taste intensity scale



RESULTS

Figure 2. Alteration taste perception frequency

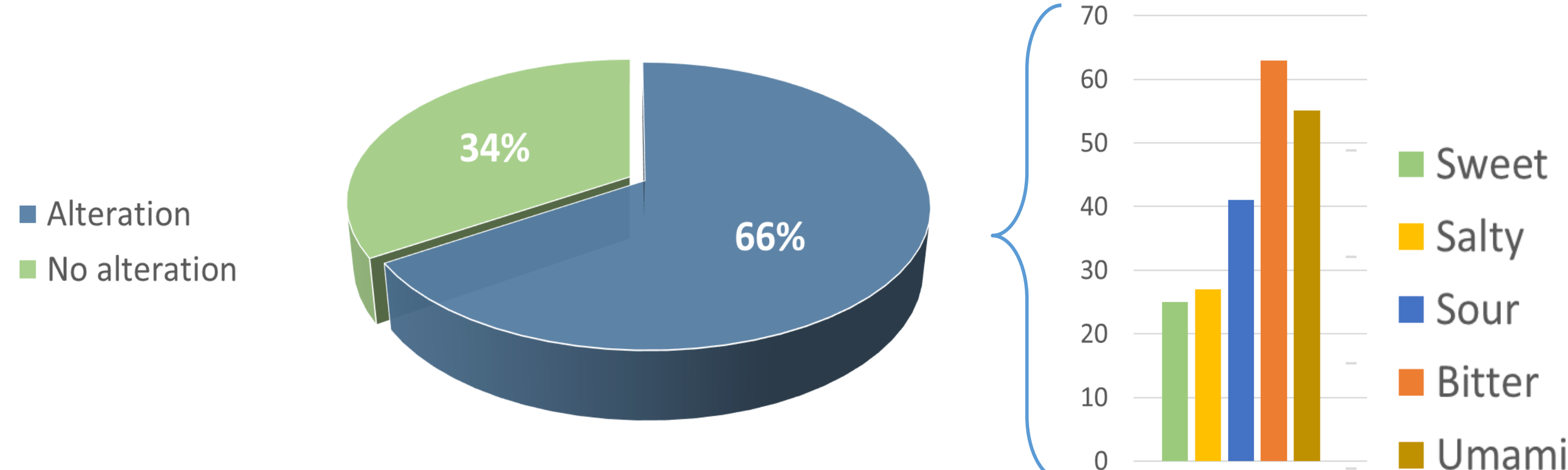


Table 2. Intensity of taste perception

Intensity score	Aletration n = 49	No alteration n = 25	p
Sweet	5.0 ± 2.6	6.0 ± 2.6	0.14
Salty	6.4 ± 2.8	7.1 ± 2.2	0.41
Sour	5.9 ± 2.4	6.2 ± 2.4	0.47
Bitter	4.1 ± 3.5	5.6 ± 2.4	0.07
Umami	5.7 ± 2.6	7.4 ± 2.6	0.07

Figure 3. Frequency of vascular calcification

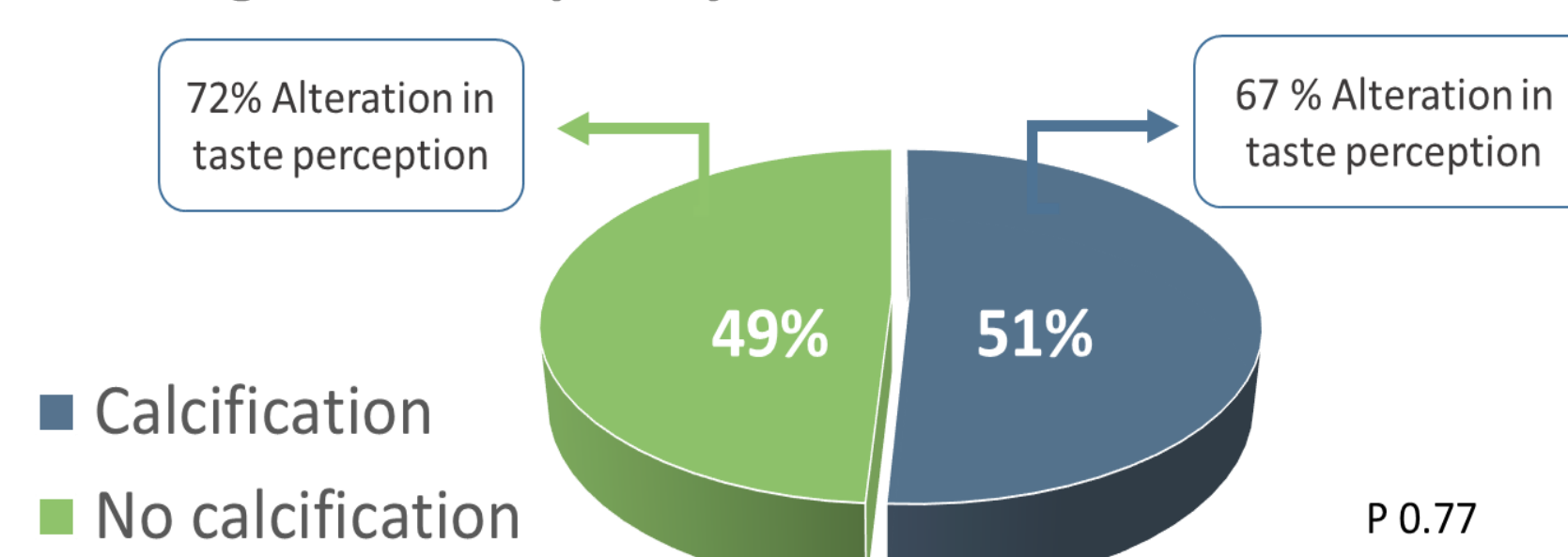


Figure 4. Frequency of PTH >300 pg/ml

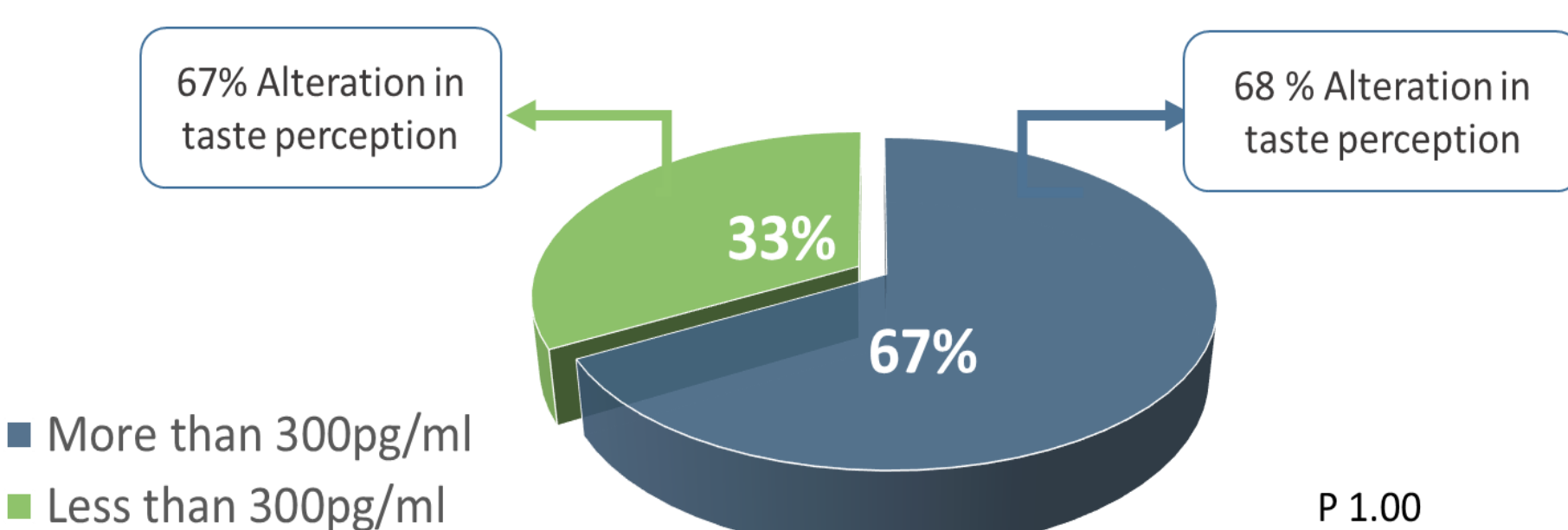


Figure 5. Vitamin-D deficiency

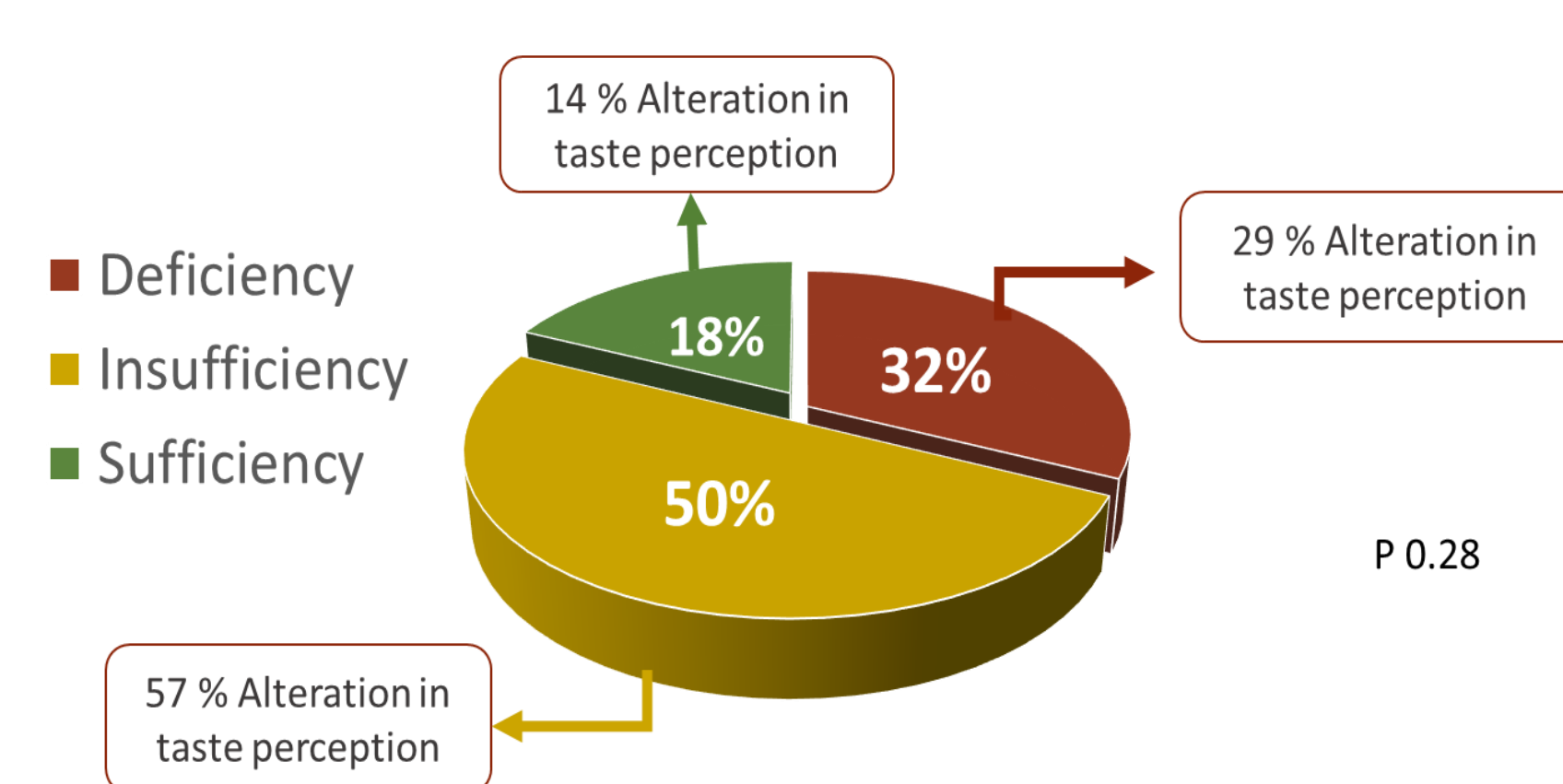


Table 3. Comparison of demographic, clinical, CKD-MBD, and nutritional variables according to the taste perception

Variable	Alteration n = 49	No alteration n = 25	p
Demographic and clinical variables			
Male sex, %	73	27	0.70
Age, years	35.9 ± 14.3	35.2 ± 13.1	0.23
Dialysis vintage, years	2.5 (1.5-5.7)	3 (1.5-5)	0.52
Type of dialysis, (HD/ PD), %	61/74	40/26	0.80
CKD-MBD and nutritional variables			
Calcium, mg/dL	8.8 (8.0-11.2)	9.2 (8.4-9.2)	0.77
Phosphorus, mg/dL	6.2 (4.7-7.7)	4.6 (3.7-5.6)	0.007
Alkaline phosphatase, U/L	110 (75-167)	103 (73-281)	0.94
25, hydroxi vitamin-D, ng/mL	22 (13-31)	30 (15-39)	0.15
Triglycerides, mg/dL	126 (93-175)	118 (93-171)	0.85
Cholesterol, mg/dL	150 (126-172)	179 (137-195)	0.23
Albumin, g/dL	3.9 (3.4-4.3)	3.7 (3.5-4.1)	0.67
DMS score			
Normal, %	0	0	0.11
Mild malnutrition, %	100	92	0.11

Values presented in media ± standar deviation and median (percentile 25-75)

CONCLUSION

The CKD-MBD is frequent in dialysis patients. Six of ten out patients showed any alteration in taste perception. Intensity of taste perception was no different among patients with and without altered taste perception. Altered taste perception is present in more than half of the patients with VC, however there are no differences between groups. Patients with no altered taste perception present higher levels of phosphorus. No differences of DMS score was found between groups; however, almost all of the patients have mild malnutrition.

Reference: ¹Barcenás E. El panel de catadores. En: Ibañez FC. Barcina Y. Análisis sensorial de alimentos. Métodos y aplicaciones. Springer. Barcelona, España. 2001: 73-85.