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***"EATING BEHAVIOUR PHENOTYPES IN PRE AND POST OPERATIVE STAGES".***



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# ***“EATING BEHAVIOUR PHENOTYPES IN PRE AND POST OPERATIVE STAGES”***

Lasagni V<sup>1</sup>, Formoso J.<sup>2</sup>, Palma R.<sup>1</sup>, Katz M., Omelanczuk, P.<sup>1</sup>, Anger, V.<sup>4</sup>

1. Batic Obesity Surgical Clinic, Mendoza, 2. Dr. Horacio J. A. Rimoldi Interdisciplinary Center for Research in Mathematical and Experimental Psychology- CONICET, Buenos Aires, 3. Faculty of Medical Sciences, Favaloro University, Buenos Aires, 4. José de San Martín Clinical Hospital, Buenos Aires, Argentina.

There are no conflicts of interest. Nothing to report. Nothing to disclose

# GENERAL OBJECTIVE



To describe phenotypes and sub-phenotypes of eating behavior in people with obesity candidates for bariatric surgery, the relationship with their previous comorbidities and the psychological symptoms related to anxiety and depression as well as comparing pre- and post-surgical eating behavior.



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# METHODOLOGY

**Design:** Descriptive – Transversal

**Sample:** 211 adults were evaluated between December 2022 and August 2023.

## **Instruments and variables:**

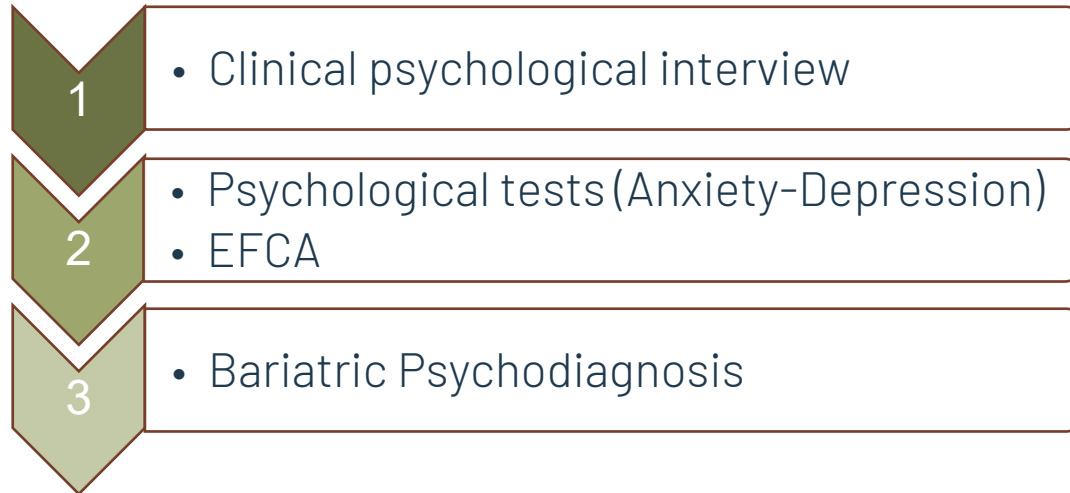
The Eating Behavior Phenotype Scale (EFCA) was used to evaluate eating dysregulation and characterize subphenotypes (disorganized, hedonic, compulsive, hyperphagic and pecking/emotional ), Beck for depression and Hamilton for anxiety.

A postoperative assessment of eating behavior was performed in 30 participants

(EFCA)

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# PRE-SURGICAL PSYCHOLOGICAL ASSESSMENT PROCESS (Batric Clinic – Mendoza, Argentina)



## Eating behaviour traits make up 5 subphenotypes

1. Hedonic: 5,8,12,14
2. Compulsive: 13,15
3. Pecking/emotional: 2,4,7,10
4. Disorganized: 11,9,16
5. Hyperphagic: 1,3,6

Fr: always - almost always - sometimes - rarely - never

Spanish and Brazilian Portuguese validated. Not English validation

EFCA		
Escala de Fenotipos de Comportamiento Alimentario		
Resultados		
Fecha: 18/08/2025 14:49		
Categoría	Puntaje	Escala
Desorganización	15	ALTO
Hedónico	11	BAJO
Compulsivo	5	MEDIO
Emocional	10	MEDIO
Hiperfágico	7	MEDIO
<b>Total</b>	<b>48</b>	<b>MEDIO</b>

- 1 I eat until I feel very full
- 2 I calm my emotions with food
- 3 When I finish my plate I usually ask for more food.  
I am used to pecking (pecking: making small intakes between the main meals: breakfast, lunch, tea time and / or dinner , without measuring the amount of what is eaten).
- 4 When I start to eat something that I really like, I have a hard time stopping.
- 5 I usually eat more than one dish for main meals.
- 6 Pecking between meals for anxiety, boredom, loliness, fear, sadness and/or tiredness.  
I am tempted to eat when I see/ smell food that I like and/ or when I walk near a shop , bakery, pizza shop or fast food shop.
- 7 I have breakfast every day.
- 8 I eat when I am bored, anxious, nervous, sad, tired, angry and / or alone
- 9 I skip at least one of the main meals (breakfast, lunch, tea time or dinner).
- 10 When I am in front of food that I like a lot, I end up eating it even if I am not hungry,
- 11 I eat a lot of food in a short time.
- 12 When I eat something that I like, I finish the whole portion..
- 13 When I eat something that I really like, I eat it very quickly.
- 14 I spend more than 5 hours a day without eating.

## SCORE OF THE FEEDING BEHAVIOR PHENOTYPE SCALE (EFCA)

Escala	Bajo	Medio	ALTO
Total	From 16 to 37	38 a 48	49 and over
Disorganized	Up to 4	5 y 6	7 and over
Hedonic	Up to 11	12 a 14	15 and over
Compulsive	Up to 3	4 a 6	7 and over
Pecking/emotional	Up to 8	9 a 12	13 and over
Hyperphagic	Up to 5	6 a 8	9 and over

Assign each answer the corresponding score: Never = 1 point, rarely = 2, sometimes = 3, almost always = 4, always = 5.

\*\*For question 9 of subscale 4, the scores should be reversed. It always equals a score of 1, almost always 2, sometimes 3, almost never 4, and never 5.

Once the total scores have been added, you should look them up in the following table to determine whether the score obtained by the subject corresponds to a low or high level of the trait measured by the subscale.

## SUBSCALES OR SUBPHENOTYPES



### **DISORGANIZED**

Skipping at least one of the main meals or an interprandial period greater than 5 hours

**(11-9\*\*-16)**



### **HEDONIC:**

Desire to eat triggered by the sensory apparatus (visual, olfactory) and/or by cognitive stimuli.

**(5-8-12-14):**



### **COMPULSIVE**

Rapid and excessive eating of food in short periods of time.

**(13-15)**



### **HYPERPHAGIC**

Consumption of excessive portions or more than one portion in a single meal.

**(1-3-6)**



### **EMOTIONAL-PECKING**

Eating triggered by negative emotions (anxiety, boredom, loneliness, fear, anger, sadness and /or tiredness) or repeated, frequent and small snacks between main meals.

**( 2-4-7-10).**



# DATA ANALYSIS

- Mean (M) and standard deviation (SD) for numerical variables and percentage in categorical variables.
- Pearson's correlation coefficient: EFCA link, BMI, Anxiety and Depression
- The Student's t test for paired samples or the Wilcoxon to evaluate the effect of bariatric surgery on the eating behavior phenotype, BMI and different laboratory measurements, the pre- and post-surgery values
- Welch t-test: assessing EFCA differences between sexes

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# Pre-surgical results

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## SAMPLE DESCRIPTION: n = 211 ( 70,14% ♀ 29,86% ♂)

n 211	X	DE
IMC	43,29	7,14
Age	41,29	10,68
Hamilton's Anxiety	12,63 (*)	10,10
Beck's Depression Inventory.	10,04 (**)	6,87
EFCA	45,94 (***)	11.31

(\*) Anxiety: Minor Anxiety Disorder  
 (\*\*) Depression: Mild Depressive Disorder  
 (\*\*\*) EFCA: Dysfunctional Eating Behavior Medium High

### References:

**Beck's Depression Inventory:**  
**Absence of Depression:** 0 to 9;  
 Mild depression: 10 to 18;  
 Moderate Depression: 19 to 29;  
 Severe Depression: 30 and +.

**Hamilton's Anxiety:**  
 Absence of Anxiety: 0 to 5;  
 Minor anxiety: 6 to 14;  
 Major Anxiety: 15 and +.

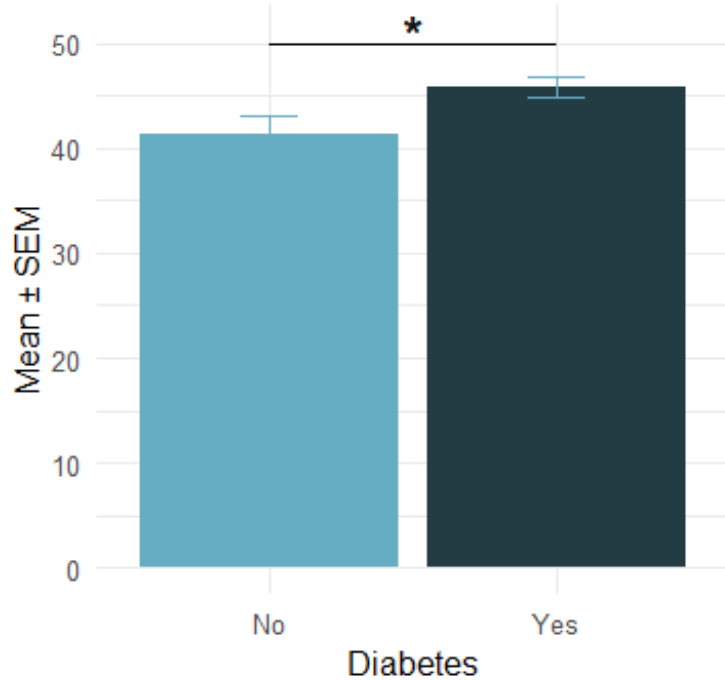
### EFCA. Total punctuation

16 a 37. low  
 38 a 48. medium  
 49 and more : High

## *Eating behavior Subphenotypes descriptive statistics.*

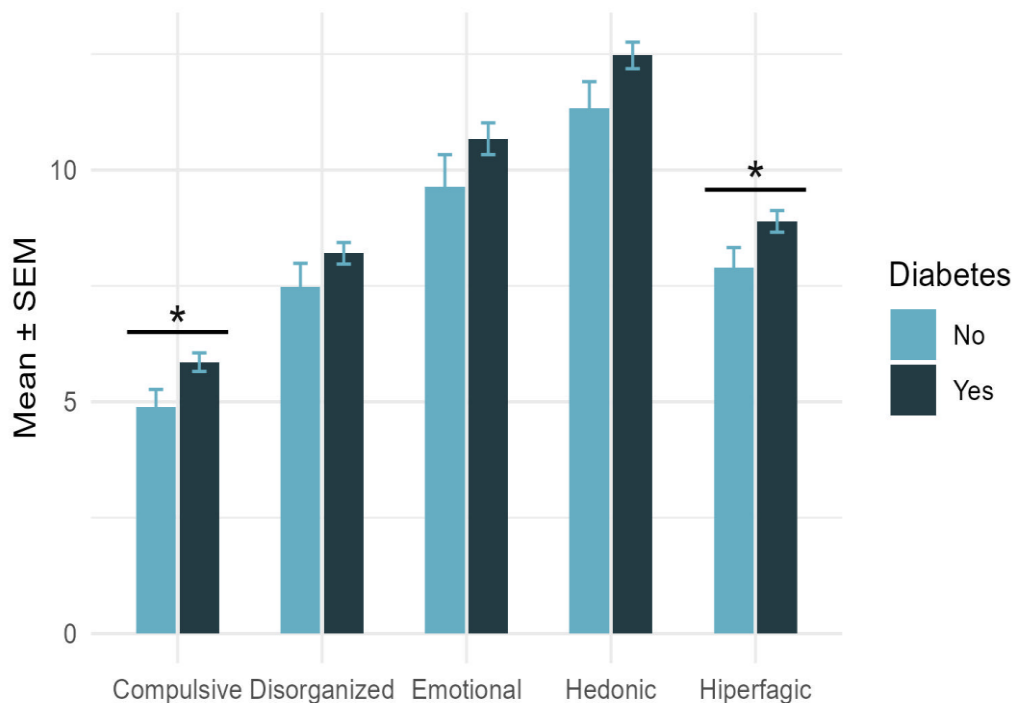
Variables	Media	DE	Descriptivo	Mínimo	Máximo	P
Compulsive	5.85	2.39	MEDIUM	2	10	< .001
Disorganized	8.01	2.8	HIGH	3	15	< .001
Emotional	10.76	4.01	MEDIUM	4	20	< .001
Hedonic	12.45	3.48	MEDIUM	5	20	< .001
Hyperphagic	8.86	2.83	MEDIUM	3	15	< .001
EFCA total	45.94	11.31	MEDIUM	20	71	0.06

## Diabetes - EFCA



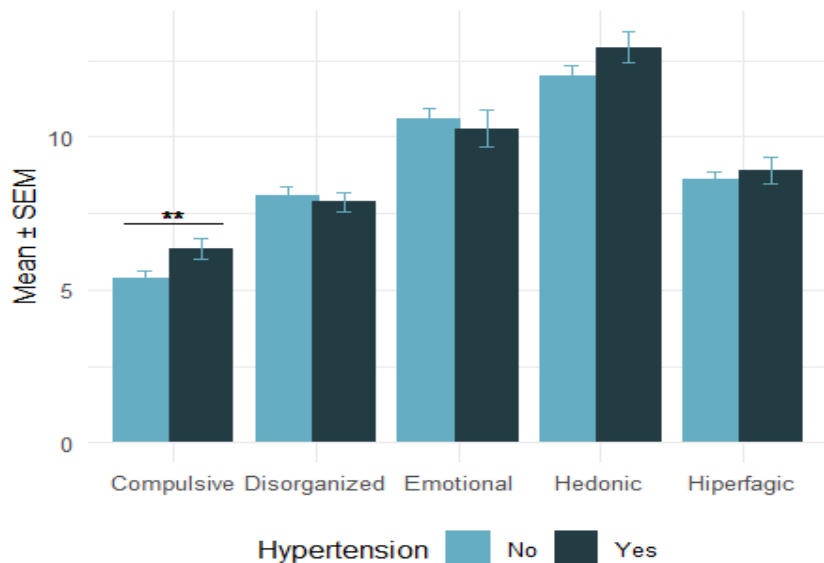
Patients with type 2 diabetes had a higher EFCA scores than non-diabetic patients.

## Diabetes - EFCA



Patients with type 2 diabetes had significant higher scores for **compulsive intake** ( $p = .03$ ), **hiperfagia** ( $p = .04$ ) and marginally for **hedonic intake** ( $p = .07$ ).

## HTA - EFCA



Patients with hypertension showed no differences in EFCA scores from non hypertensive participants, except for the **compulsive intake** subscale ( $p < .01$ ), where they had higher scores.



# Post-surgical results

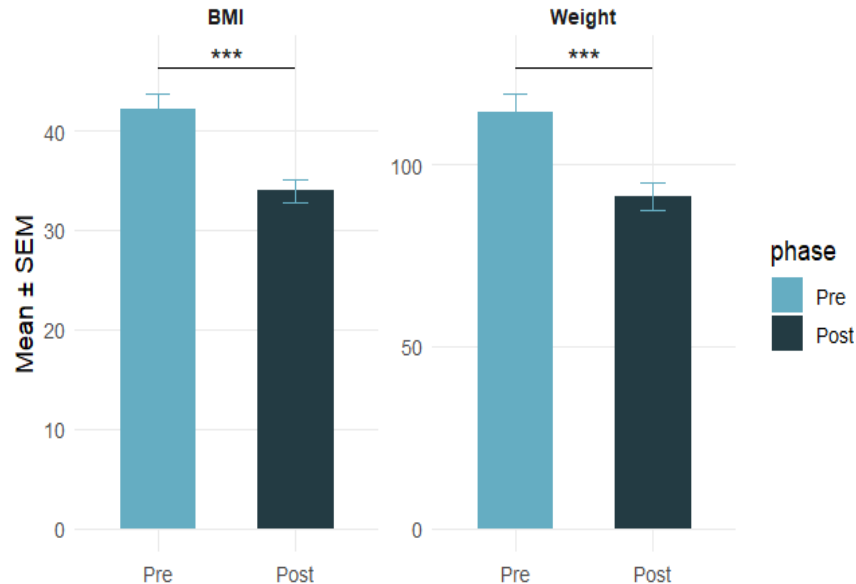
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## POST-SURGICAL EVALUATION: N° 31 ( 45,16% ♀ 54,84% ♂) –

- Mean age of 39.54 (SD = 11.40) 29 GS and 2Y-bypass de Roux
- Mean pre-surgical BMI was 42.02 (SD = 7.94).
- Mean time elapsed between pre- and postoperative estimates was **118 days** (SD = 55)
- Mean reduction of 8.48 kilos (SD = 3.11), BMI of 33.33 (SD = 6.41) in the postoperative time.
- **After surgery, all EFCA values are significantly reduced.**
- In addition, a significant decrease in metabolic parameters was detected in glycemia

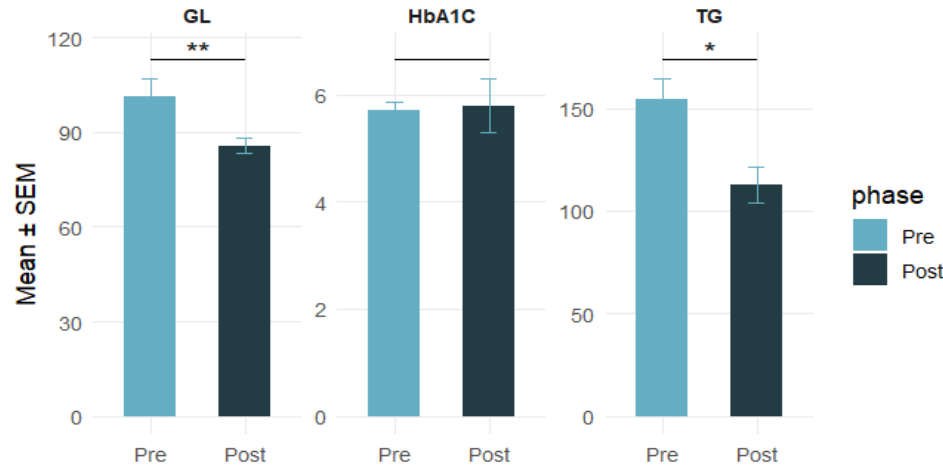
## Weight and BMI



At the postoperative assessment, weight decreased by a mean of 23.3 kg (95% CI 19.9–26.7) and BMI by 8.3 units (95% CI 7.2–9.4).

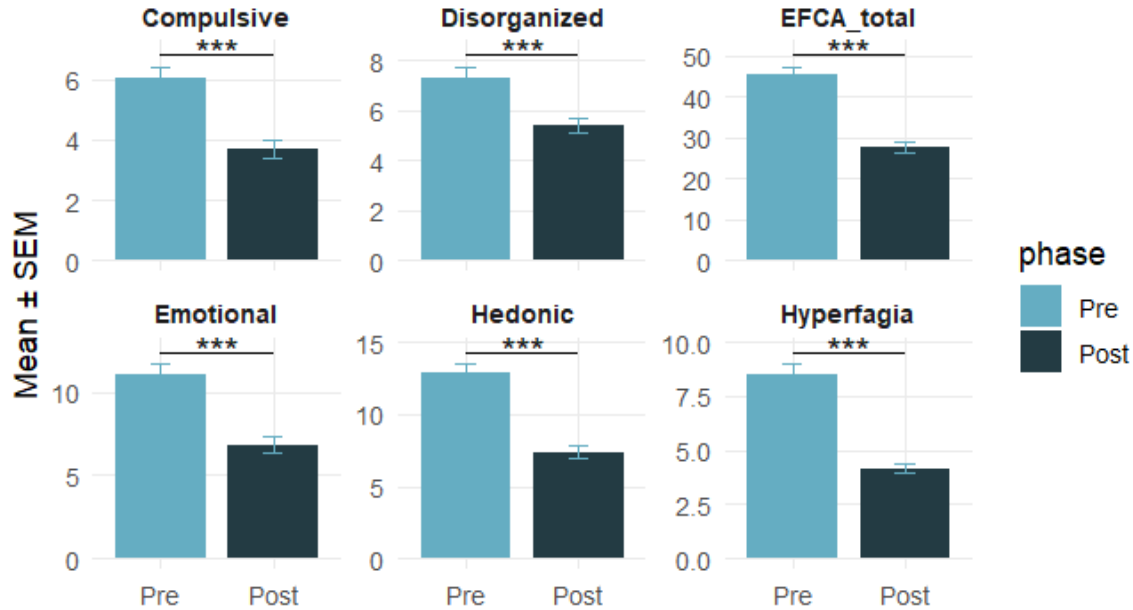


## Metabolic parameters



There was a significant reduction in **blood glucose (GL)** and **triglyceride levels (TG)** at the post-surgical assessment, whereas **HbA1c** did not change significantly.

## EFCA SCORES



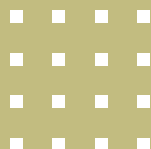
Significant postoperative reductions were observed in EFCA total and every subscale.



# Conclusions

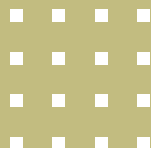


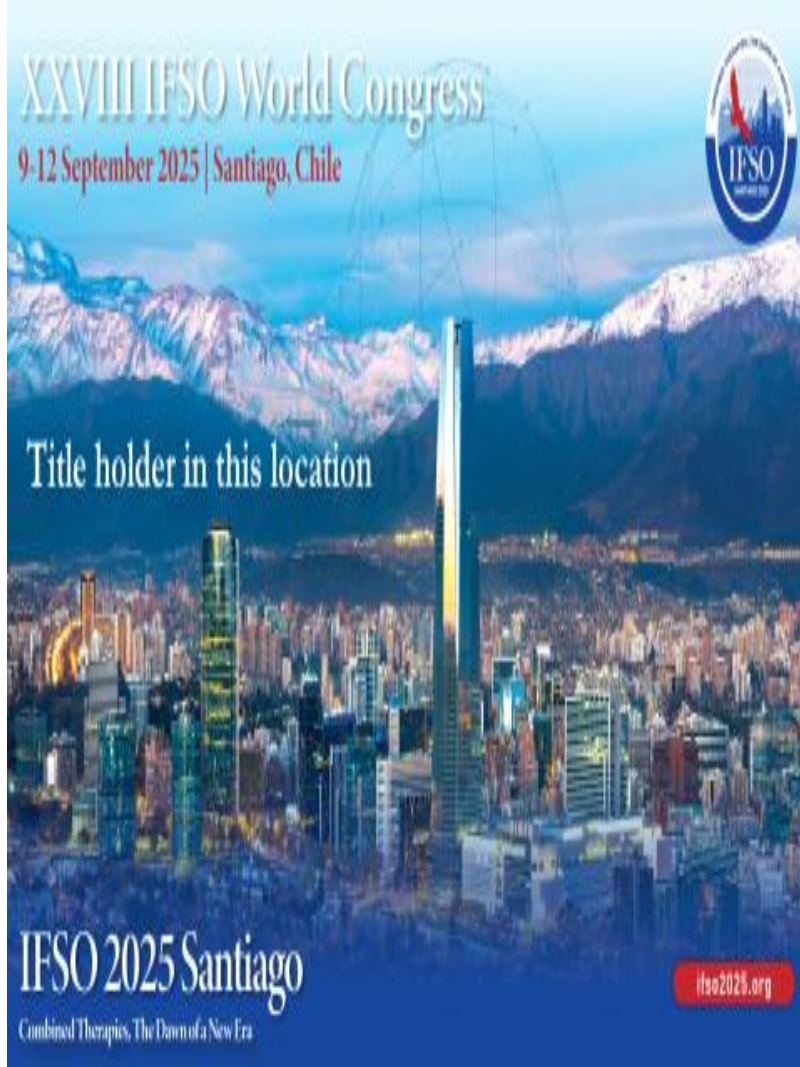
- **Strong postoperative improvement: marked weight loss and early metabolic gains, with significant reductions in dietary disregulation.**
- **Risk profiles: T2D patients show higher dysregulation - especially compulsive and hyperphagic intake (hedonic trending).**
- **Depression/anxiety relate to emotional/hedonic intake, and BMI correlates with hedonic/ hyperphagic intake— supporting targeted behavioral follow-up and EFCA monitoring.**





- Eating dysregulation and associated psychopathological conditions can increase the risk of excessive caloric intake.
- Detecting these disorders in the pre-surgical phase will allow for timely intervention to prevent or reduce the recurrence of weight gain.
- A better understanding of the psychological and/or behavioral mechanisms underlying obesity could aid in the development of psychological intervention strategies.
- An interdisciplinary approach is necessary to ensure that surgical treatment of obesity is not insufficient.





## Thank you for your attention

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