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Division of Public Mental Health  
& Population Sciences  
Sleep Epidemiology Center



INSTITUTO NACIONAL DE PSIQUIATRÍA  
RAMON DE LA FUENTE MUÑIZ

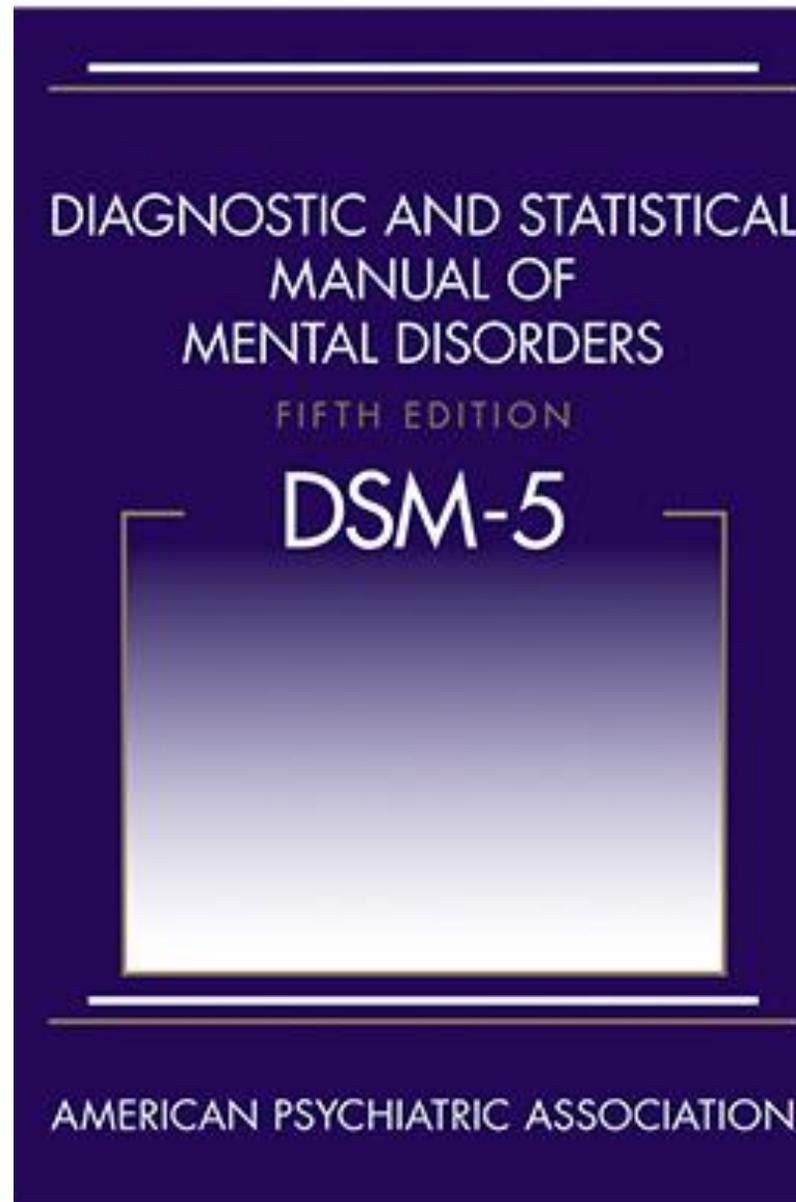
# Gastro-esophageal Reflux Disease and its Relationship with Mental Disorders

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As it is not proper today to cure the eyes without the head nor the head without the body, so neither is it proper to cure the body without the soul, and this is the reason why so many diseases escape Greek physicians who are ignorant of the whole.

*Socrates*



American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5 ed. Arlington; 2013

# Major Mood Disorder



\*

Depressed mood or irritability



\*

Decreased interest or pleasure



Significant weight change (5%)  
or change in appetite



Change in sleep



Change in activity



Fatigue or loss of energy



Guilt/ worthlessness



Concentration



Suicidality

# Anxiety Disorders

Anxiety is a normal reaction to stress

**Fight**  
Say something back

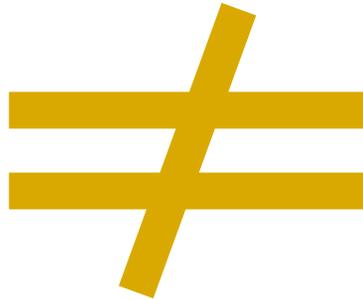
**Flight**  
Physically leave the area

**Freeze**  
Don't say anything and hope that the person will leave.

**Stressful situation:**  
Your boss accused you of bankruptcy of the company

# Anxiety Disorders

- Anxiety is a normal reaction to stress



- Anxiety disorders share features of excessive fear and anxiety and related behavioral disturbances

## Fear and anxiety in an Anxiety Disorder:

1. Be out of proportion to the situation or age inappropriate.
2. Hinder the ability to function normally.

# GERD

- Common health problem
  - Affects 10-20% of the adult population
  - At least weekly in the western world

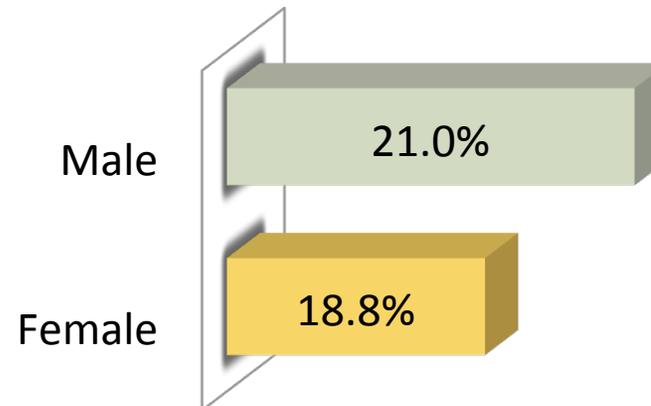


# GERD in México



# Prevalence of GERD

- 19.6% of the Mexican adults with heartburn



- 26.5% of the subjects with GERD had Depression

2010

# Mexican Meal



**UNITED NATIONS**

Educational, Scientific, Cultural Organization



# Meal times

## Breakfast

- 7:00- 10:00 AM

## Breakfast

- 7:00- 10:00 AM

## Lunch

- 12:00- 2:00 PM



## Lunch

- 2:00-5:00 PM

## Dinner

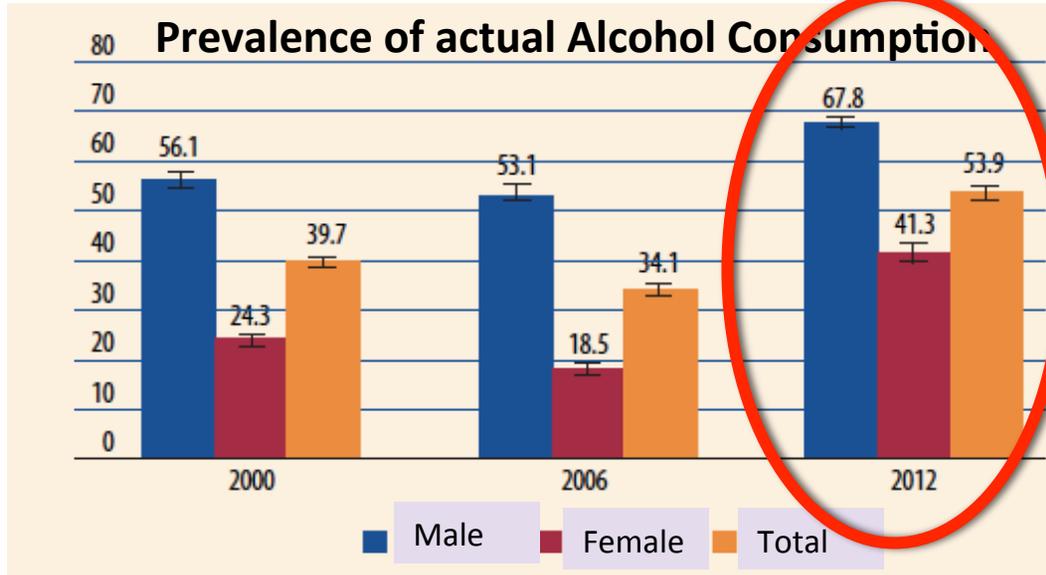
- 6:00- 7:00 PM

## Dinner

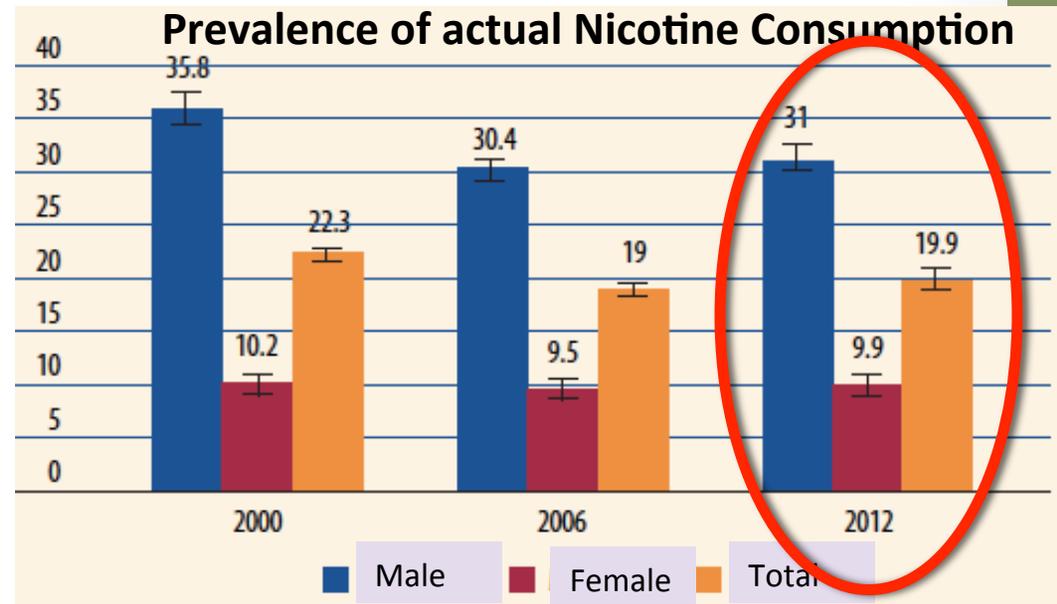
- 8:00-11:00 PM



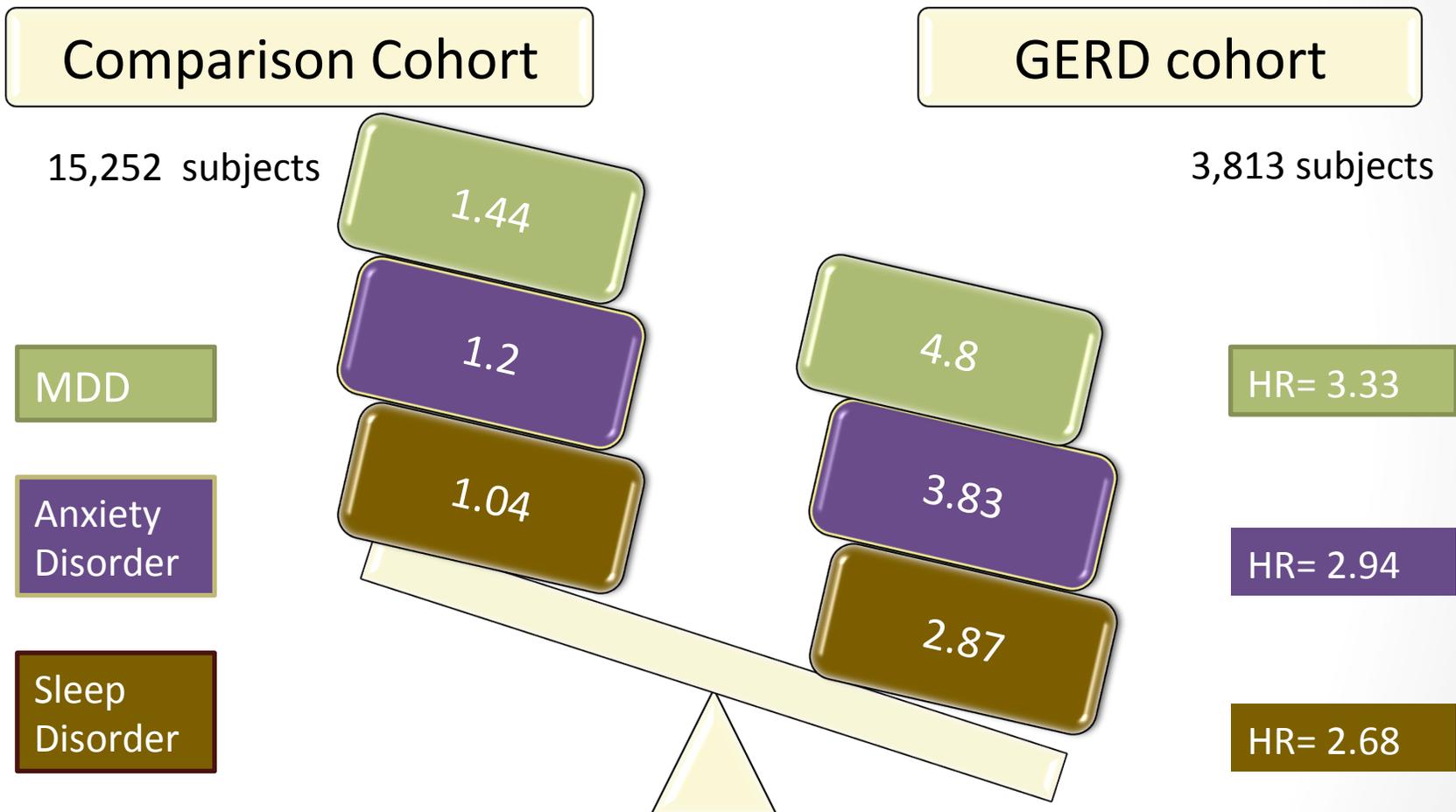
## Alcohol Consumption among Mexicans



## Nicotine Consumption among Mexicans



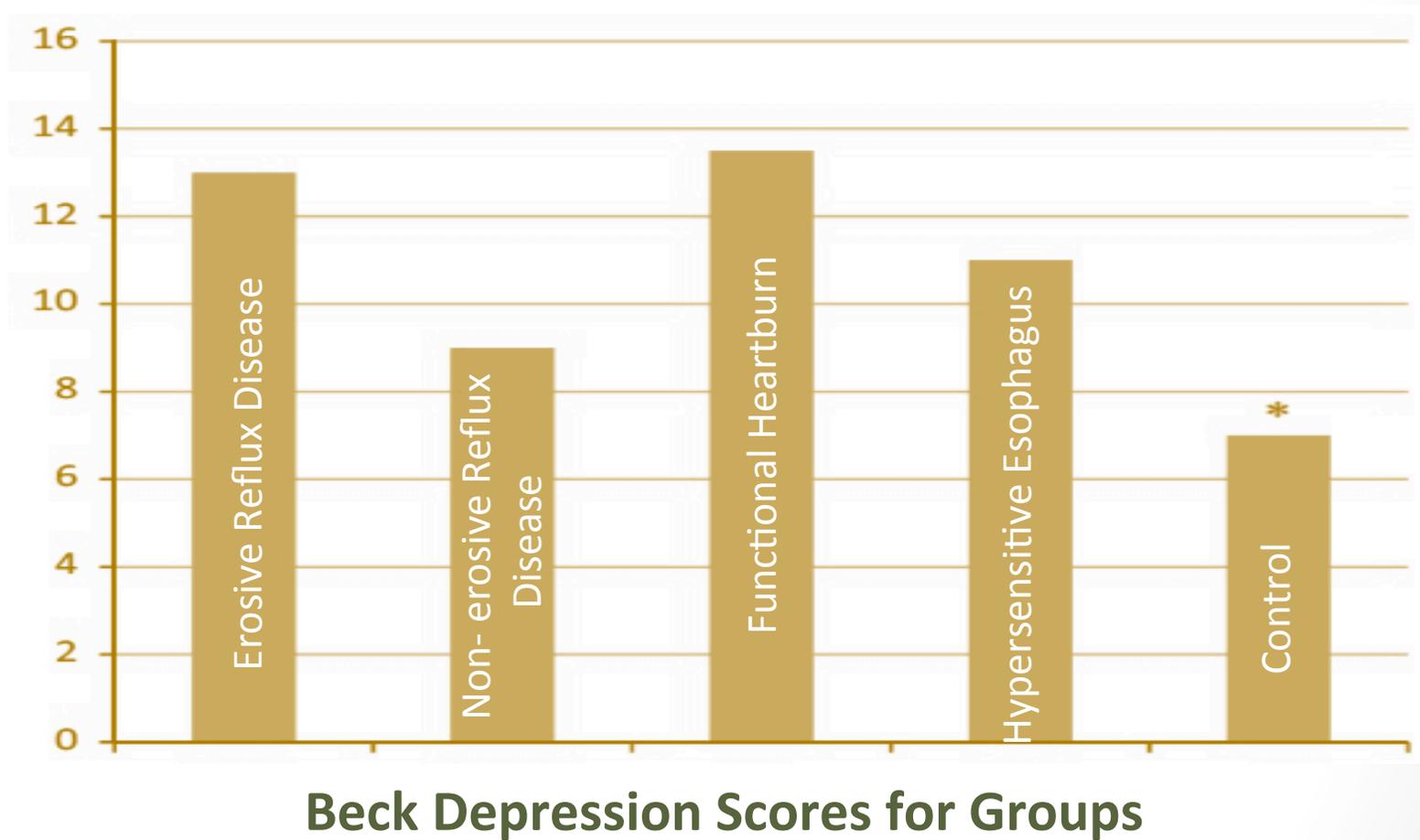
# Relationship Between GERD and Subsequent Mental Disorders



## Incidence rates for psychiatric disorders (per 1000 persons-years)

You Z-H. Risk of psychiatric disorders following gastro esophageal reflux disease: A nationwide population- based cohort study. Eur J Int Med 2015; 26 (7): 534-9

# Psychiatric Comorbidity in GERD Subgroups



# Major Depressive Disorder and Development of GERD



Depression Cohort (n=40,362)

- Incident GERD diagnosis (n=1,854)
- Incidence of GERD= 14.2: 1000-years GERD
- HR= 1.72
- Higher risk in the first year of diagnosis with MDD than > 1 year (OR = 1.55 vs. 1.21)



Control Cohort (n= 44,511)

- Incident GERD diagnosis (n=1,210)
- Incidence of GERD= 8.3: 1000-years

# Major Depressive Disorder and Development of GERD

## ASSOCIATION BETWEEN CURRENT USE OF PSYCHOTROPIC MEDICATION AND GERD

Psychotropic Drug	OR	95% CI
TCA	1.71	1.34-2.20
SSRI	0.93	0.79-1.10
SNRI	1.20	0.86-1.67
Antipsychotics	1.45	1.09-1.92
Anxiolytics	1.66	1.19-2.32
Hypnotics	0.97	0.74-1.28

Martin- Merino E, et al. Depression and treatment with antidepressants are associated with the development of gastro-esophageal reflux disease. *Aliment Pharmacol Ther* 2010; 31: 1132-1140.

# Bi-Directionality?

There seems to be a complex interplay between anxiety and depression and reflux symptoms, and the link between psychiatric factors and gastro esophageal reflux may be bi- directional.

# Bi-Directionality?

## GERD and new cases of Psychiatric Disorders

1. Result of an inflammatory process caused by GERD (IL-6, IL-8, IL-1 $\beta$ , TNF- $\alpha$ , PAF, ROS)
2. GERD symptoms promote arousals which activate neuroendocrine systems  $\rightarrow$  sleep disorder  $\rightarrow$  MDD
3. Reflux symptoms may result in anxiety and depression as a consequence of worry and being bothered by reflux symptoms over time.

## Psychiatric Disorders and new cases of GERD

1. Intrinsic psychological and physiological effect
2. The effect of different psychiatric medications
3. Indirect effect of an injurious lifestyle

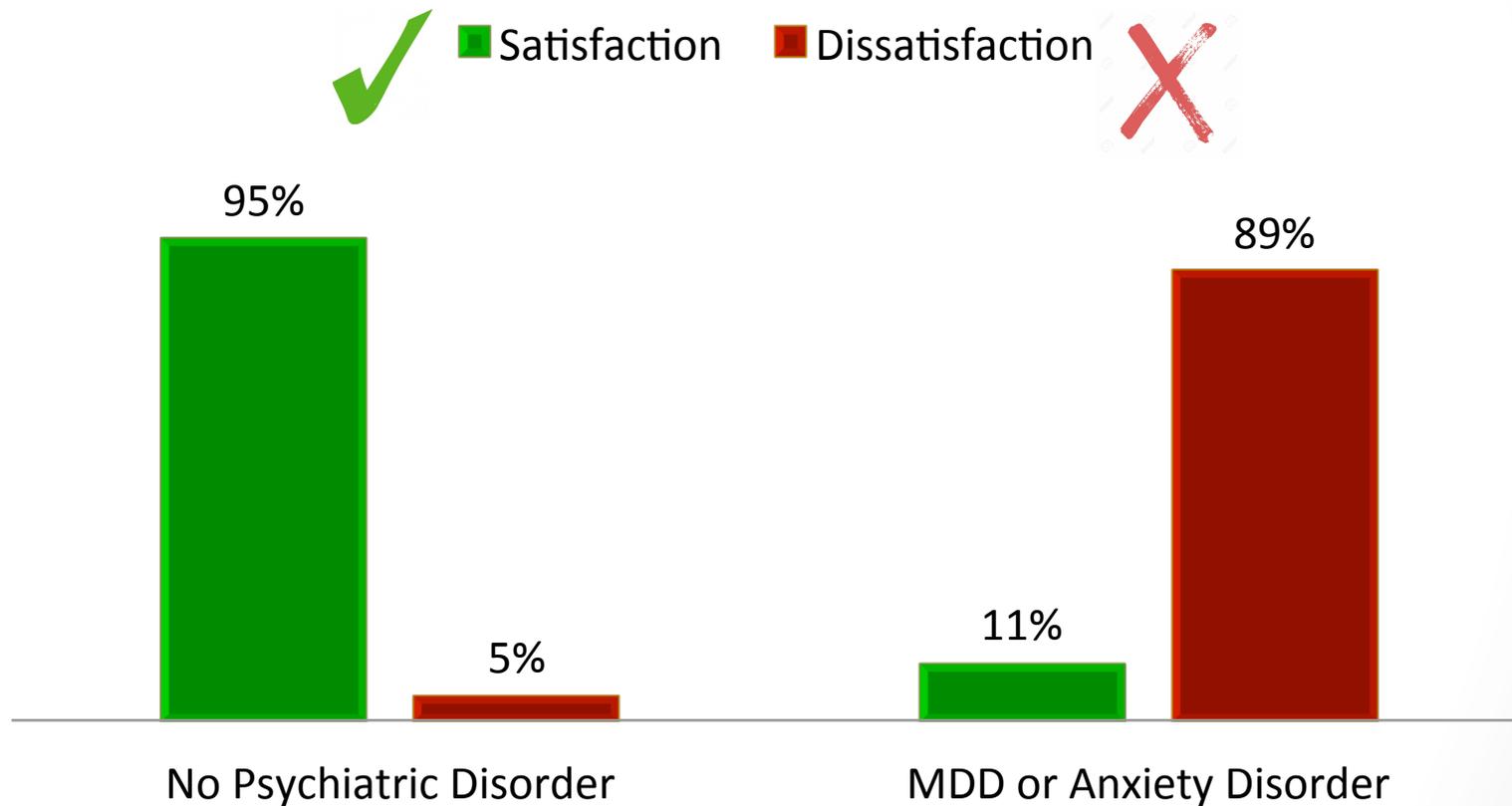
You Z-H., et al. Eur J Int Med 2015; 26 (7): 534-9;  
Avidan B., et al. Aliment Pharmacol Ther 2001; 15: 1907-1912.  
Jansson C., et al. Aliment Pharmacol Ther 2007; 26: 683-691.

# Psychiatric Disorders and Outcome of Medical Treatment

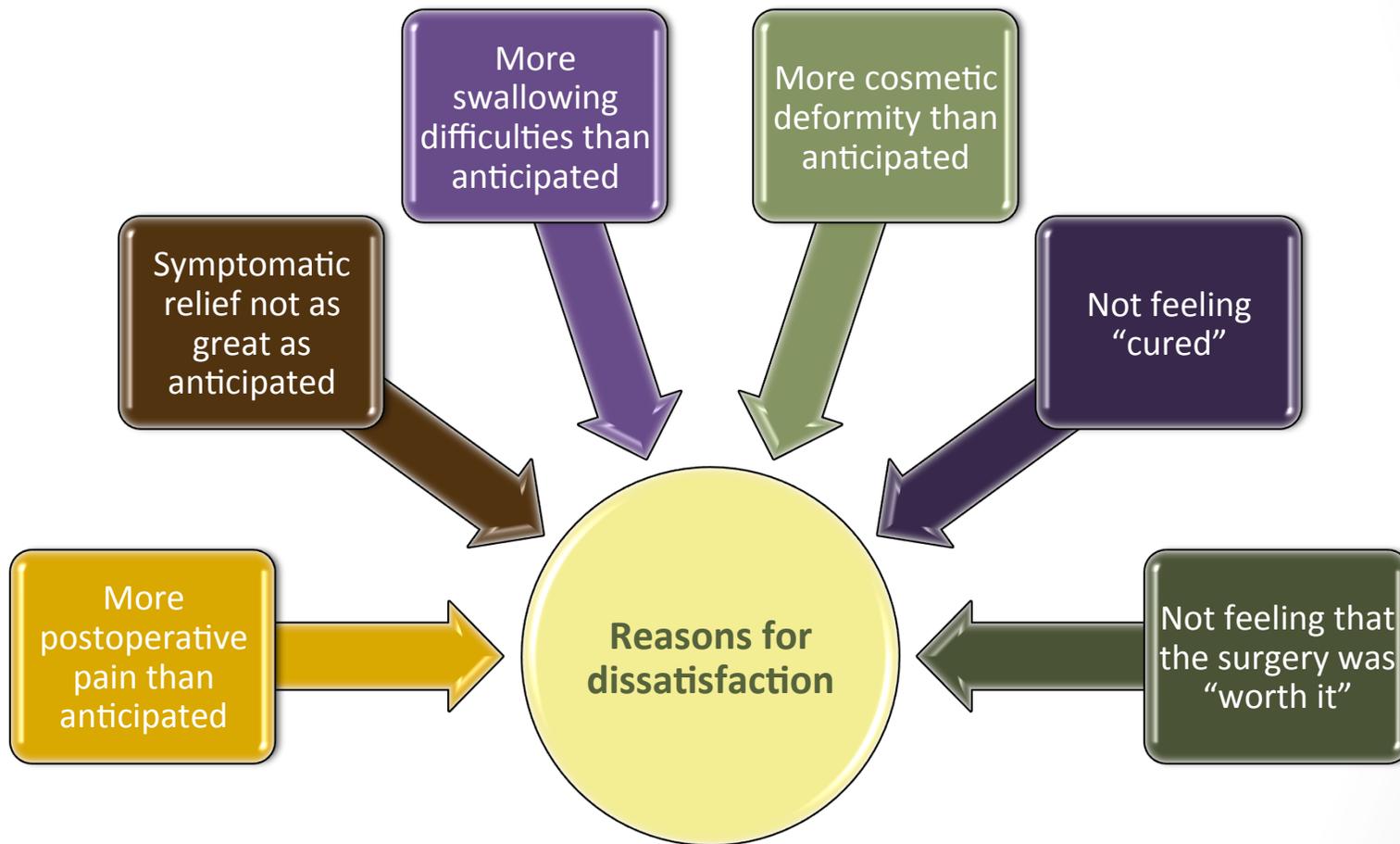
Study	n	Medical Treatment	Duration of treatment	Instrument for assessing response	Predictors of treatment response
Heading RC, et al., 2011	188 8	Pantoprazole 40 mg	8 weeks	ReQuest questionnaire + satisfaction report by the patient	<u>Poor response:</u>  Non- erosive disease, female gender, lower BMI, <u>anxiety</u> + IBS symptoms before treatment.
Wang AJ, et al., 2013	204	Esomeprazole 20mg	8 weeks	GerdQ questionnaire	<u>Poor response:</u>  IBS alone , <u>depression</u> , IBS + functional dyspepsia
Matsudashi N, et al., 2015	182	Omeprazole 20mg, Lansoprazole 30mg, or Rabeprazole 10 or 20 mg	4 weeks	GERD-TEST	<u>Poor response:</u>  Absence of erosive esophagitis, higher epigastric pain/burning symptom score, <u>higher depression scores</u>
Kimura Y., et al., 2016	145	Omeprazole 10 or 20mg, Lansoprazole 15 or 30mg, or Rabeprazole 10 or 20 mg	8 weeks	GerdQ questionnaire	<u>Poor response</u>  <u>Sleep disorders, anxiety disorder, depressive disorders,</u> non- erosive disease, double the doses of PPI
Goh, KL, et al., 2014.	209	Pantoprazole 40 mg	8 weeks	ReQuest questionnaire	<u>High response:</u>  Erosive reflux disease, <u>improvements in QoL, anxiety and depression at 4 and 8 weeks,</u> patients satisfaction

# Psychiatric Disorders and Outcome of Antireflux Surgical Treatment

## Satisfaction with the Results of Antireflux Surgery

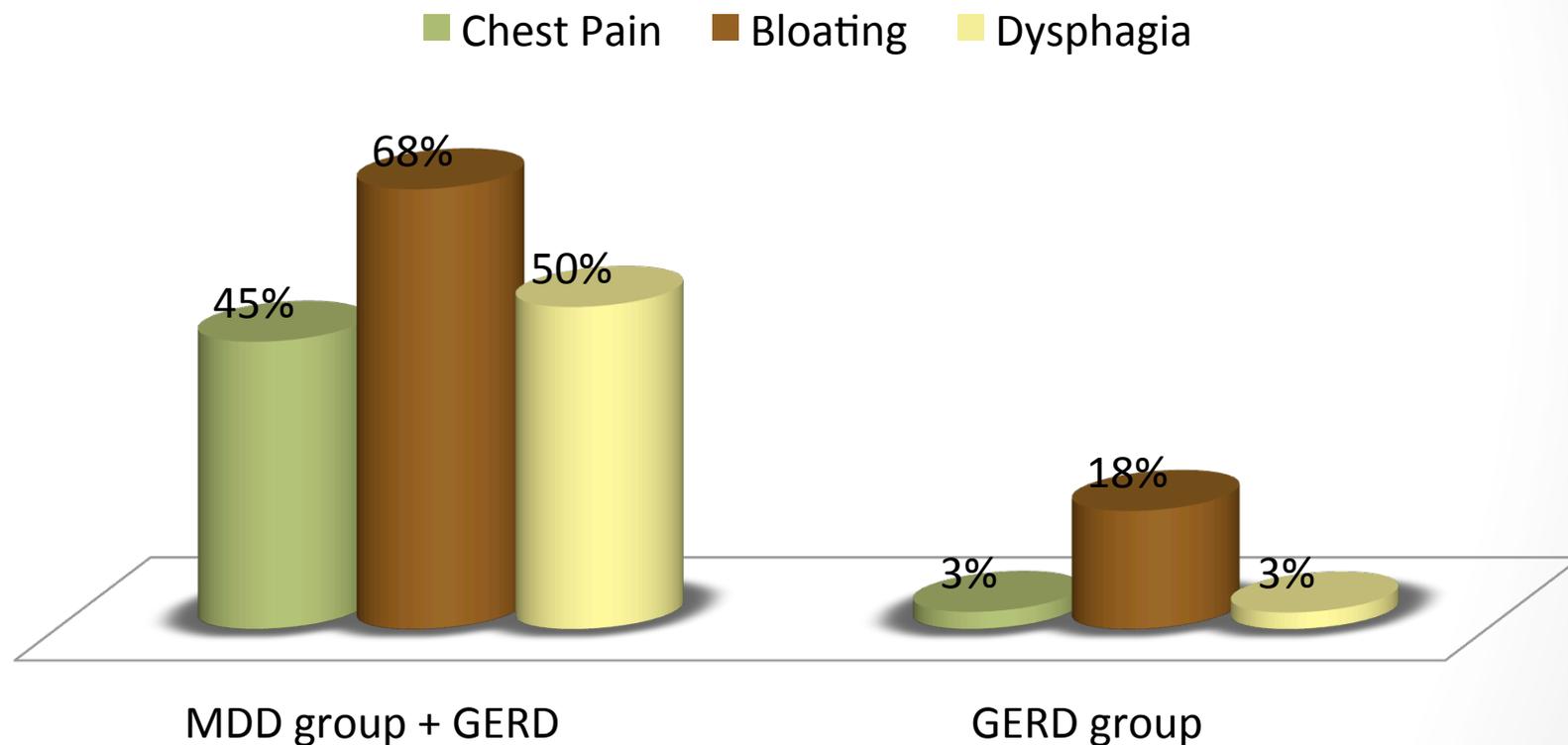


# Psychiatric Disorders and Outcome of Antireflux Surgical Treatment



# Psychiatric Disorders and Outcome of Antireflux Surgical Treatment

## Comparison of Groups Postoperatively



# Thank you



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