

# 勃起功能障礙的流行病學

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# Erectile Dysfunction (ED): Definition

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“ . . .the **consistent or recurrent** inability of a man to attain and/or maintain a penile erection sufficient for sexual performance”



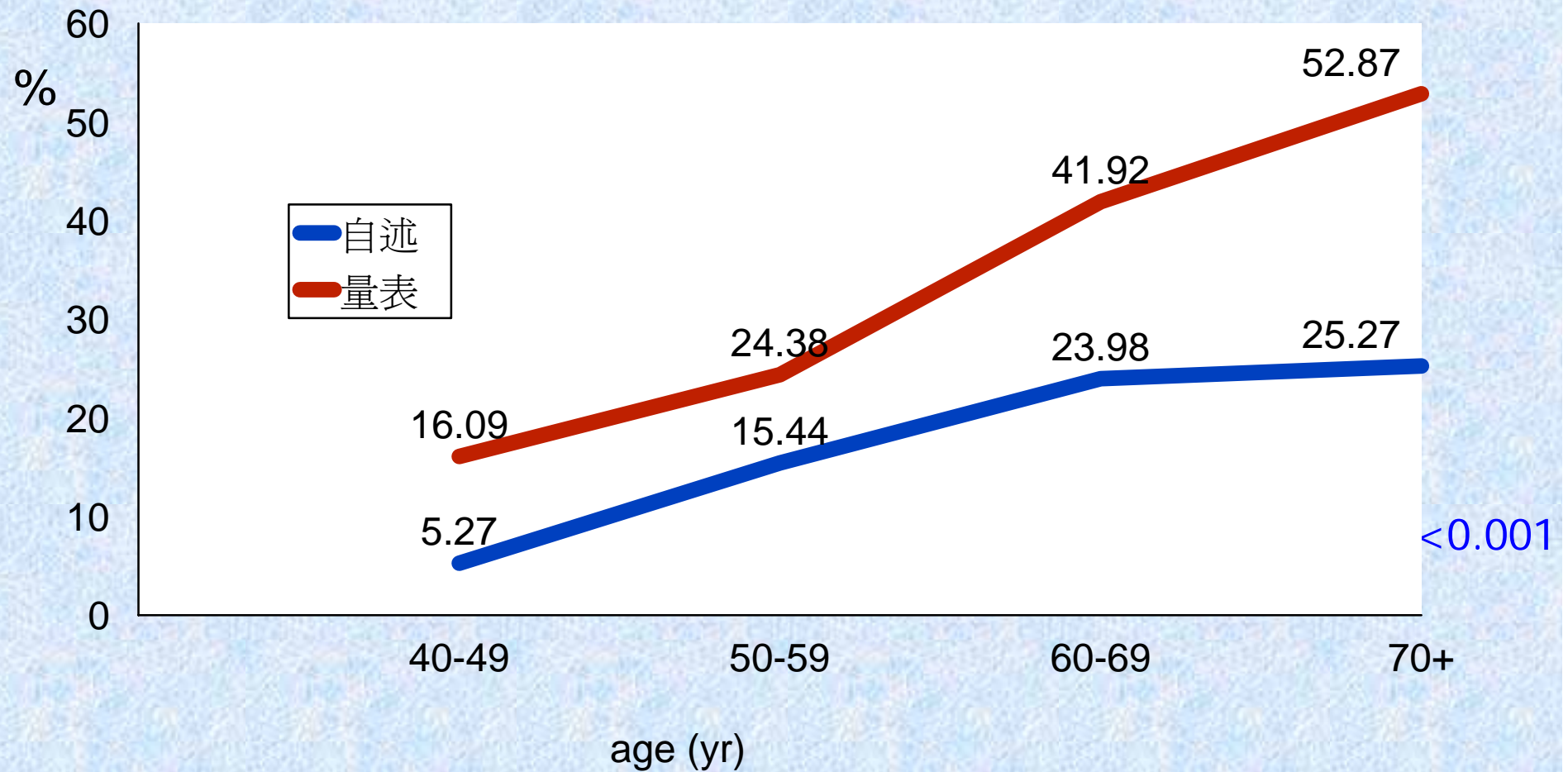
# 國際勃起功能指數五題問卷 (IIEF-5)

在過去六個月以來

		非常低 1	低 2	普通 3	高 4	非常高 5
1. 您對您能夠勃起並維持勃起狀態的信心如何？						
2. 當您在性刺激下勃起時，勃起的硬度足以進入伴侶體內的頻率如何？	沒有性 行為  0	幾乎沒 有或沒 有 1	幾次 (比一 半少許 多) 2	有時候 (大約一 半) 3	大部份 (比一半 多許多) 4	幾乎都 是或都 是 5
3. 在性交過程中，您能在進入伴侶體內之後還能維持勃起狀態的頻率為何？	未嘗試 性交 0	幾乎沒 有或沒 有 1	幾次 (比一 半少許 多) 2	有時候 (大約一 半) 3	大部份 (比一半 多許多) 4	幾乎都 是或都 是 5
4. 在性交過程中，為完成性交而維持勃起的困難程度為何？	未嘗試 性交 0	非常困 難 1	很困難 2	困難 3	有點困 難 4	不會困 難 5
5. 當您完成性交時，能讓您滿足的頻率為何？	未嘗試 性交 0	幾乎沒 有或沒 有 1	幾次 (比一 半少許 多) 2	有時候 (大約一 半) 3	大部份 (比一半 多許多) 4	幾乎都 是或都 是 5

正常:>21 輕度障礙:12-21 中度障礙:8-11 重度障礙:5-7

# 年齡別ED盛行率



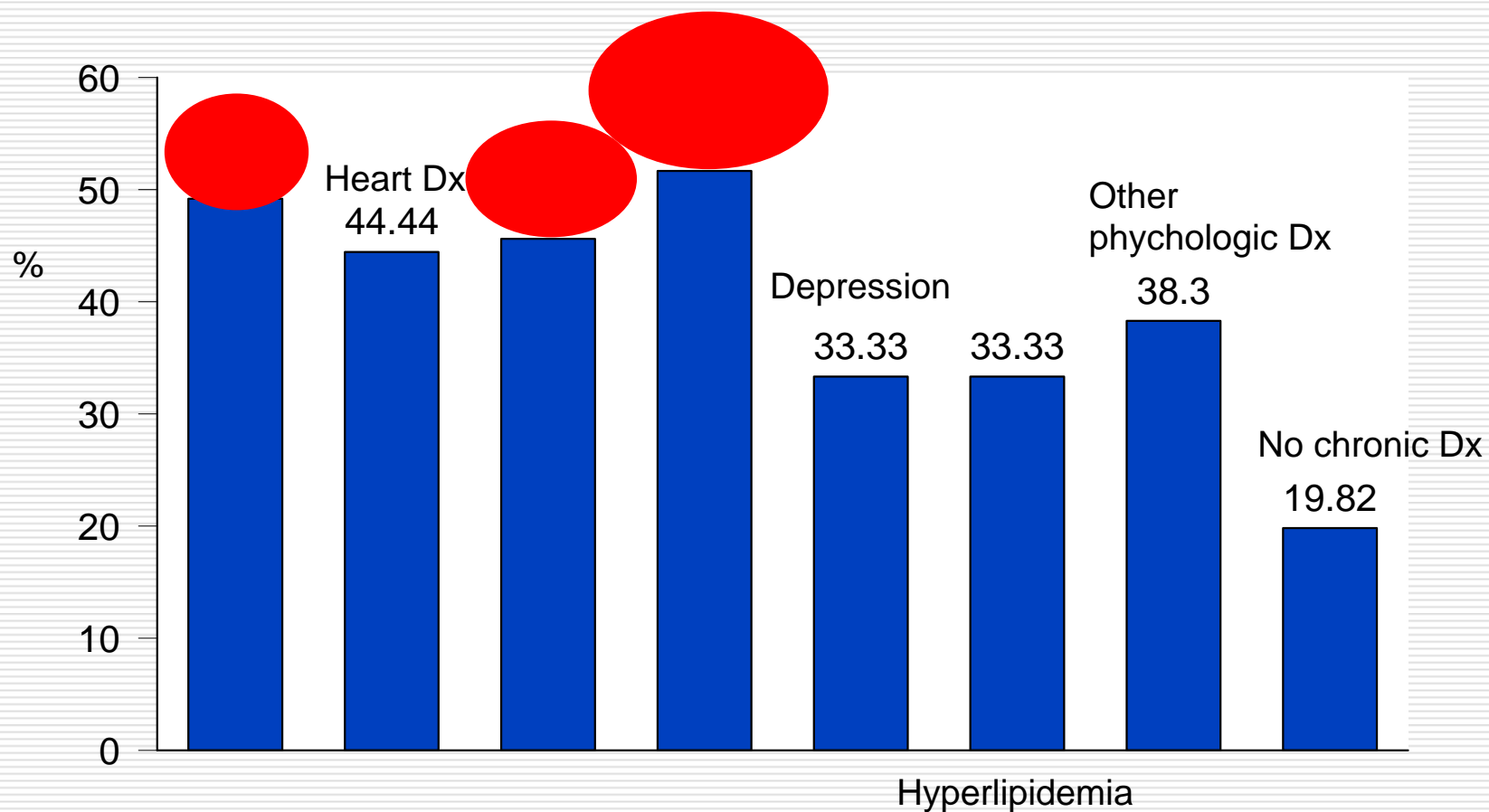
Taiwan EDACT 2003



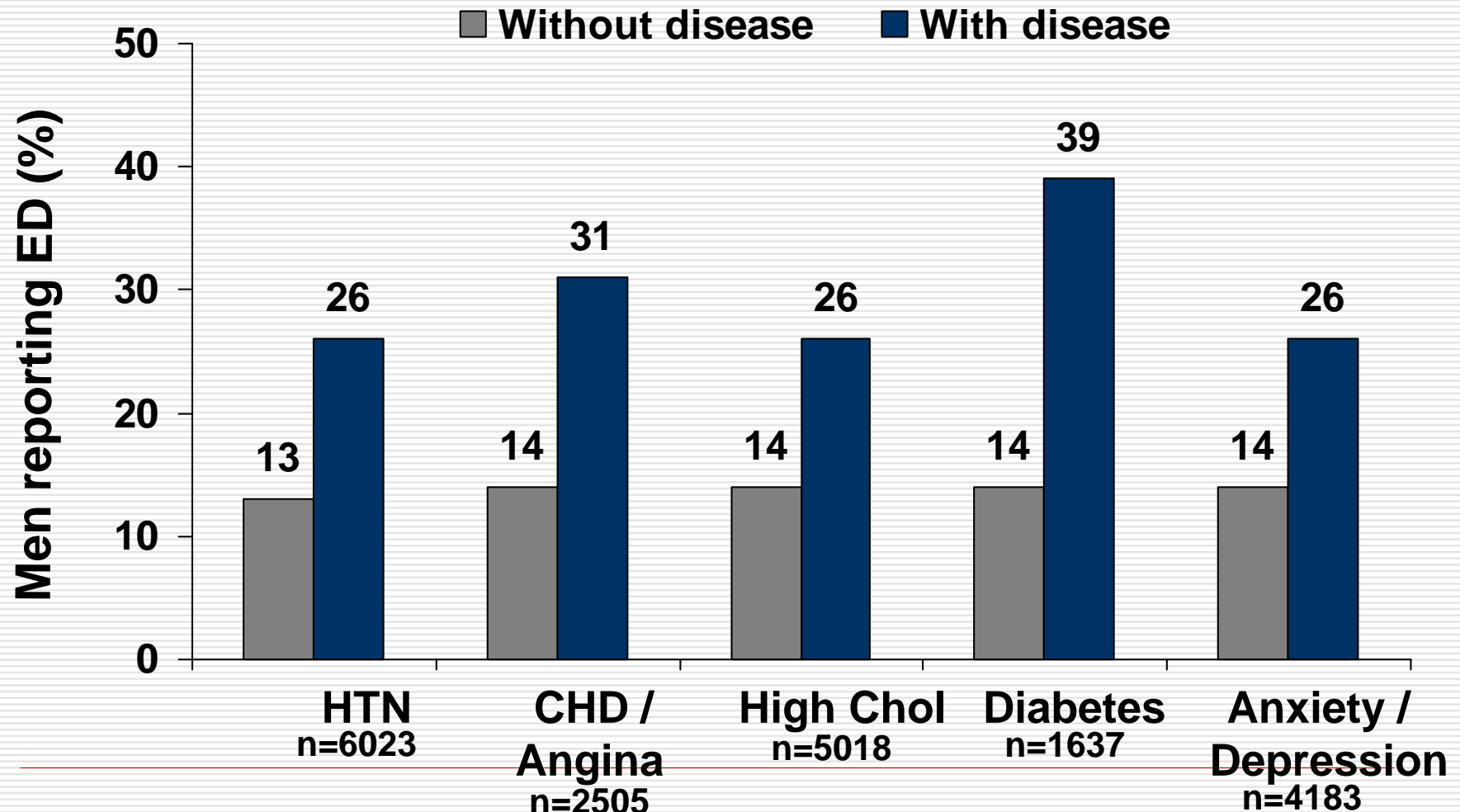
## Prevalence of ED in Asian Pacific Countries

State	Reference	Age	ED	Moderate to complete ED
Australia	Chew et al. (1997)	18–91 years	39.4%	18.6%
	Pinnock et al. (1999)	>40 years	25.7%	
China	Leng et al. (1998)	>40 years	73.1%	18.2%
Japan	McKinly et al. (1998)	40–70 years	71%	
Korea	Ahn et al. (1998)	>50 years	58.9%	17.1%
Malaysia	Tambi et al. (1998)	40–70 years	60%	16%
Singapore	Tan et al. (1999)	>40 years	58.5%	23.3%
<b>Taiwan</b>	<b>EDACT 2003</b>	<b>&gt;40 years</b>	<b>26%</b>	<b>11.5%</b>

## 慢性病史者之ED盛行率 (量表)



# Higher Prevalence of ED in Men with Recognizable Risk Factors



# Prevalence of Erectile Dysfunction

## 麻州男性老化研究

(Massachusetts Male Aging Study, MMAS,  
N=1,290)

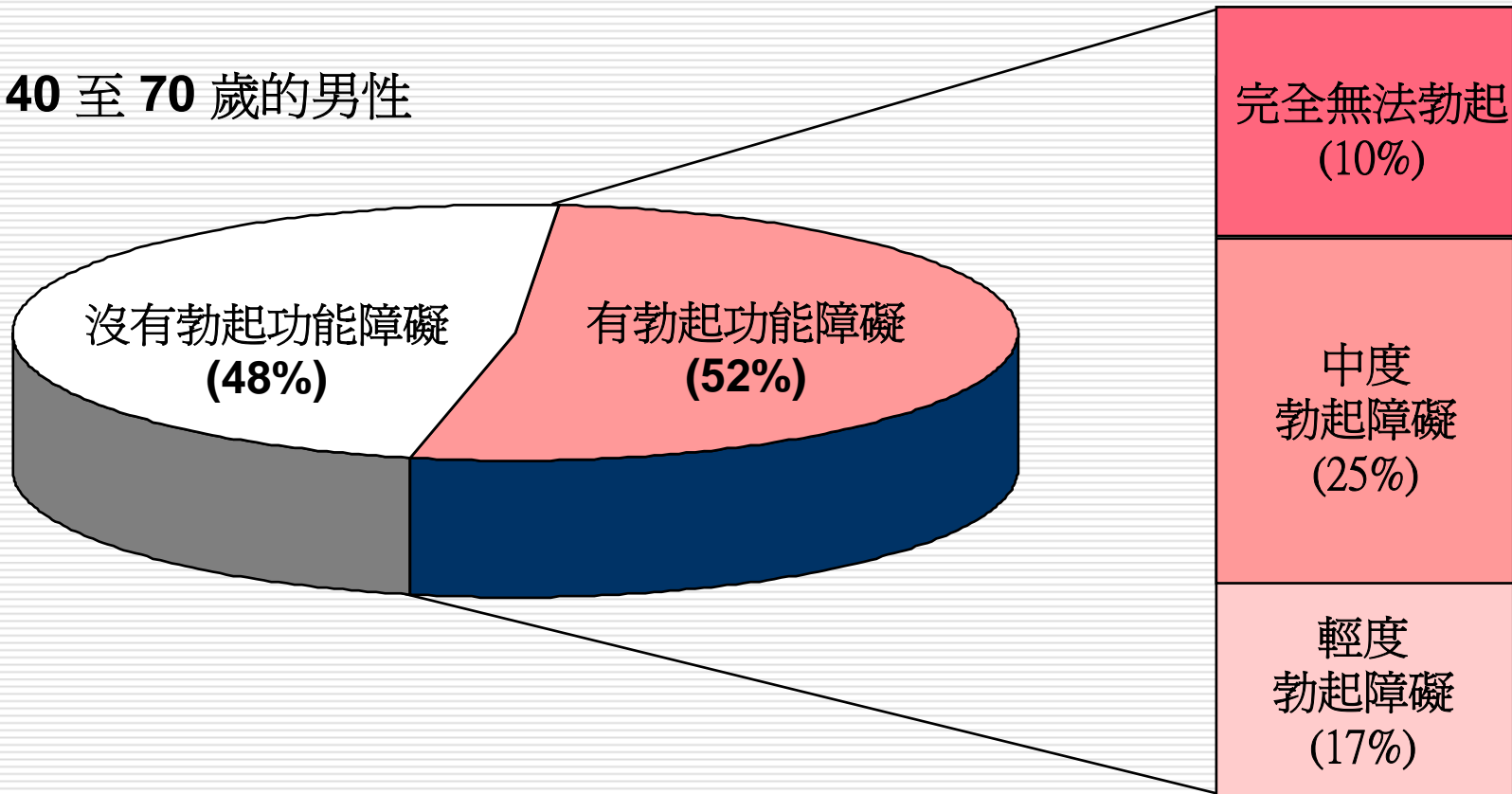
- **40-70**歲男性，接受隨機抽樣問卷調查
- **1987 - 1989** 年，在麻州境內靠近波士頓的**11** 個城市中進行問卷調查
- 方法：由受訪者自行填寫勃起功能障礙評估表
- **75%** 的受訪者填了有效問卷 (**1,290 of 1,709**)



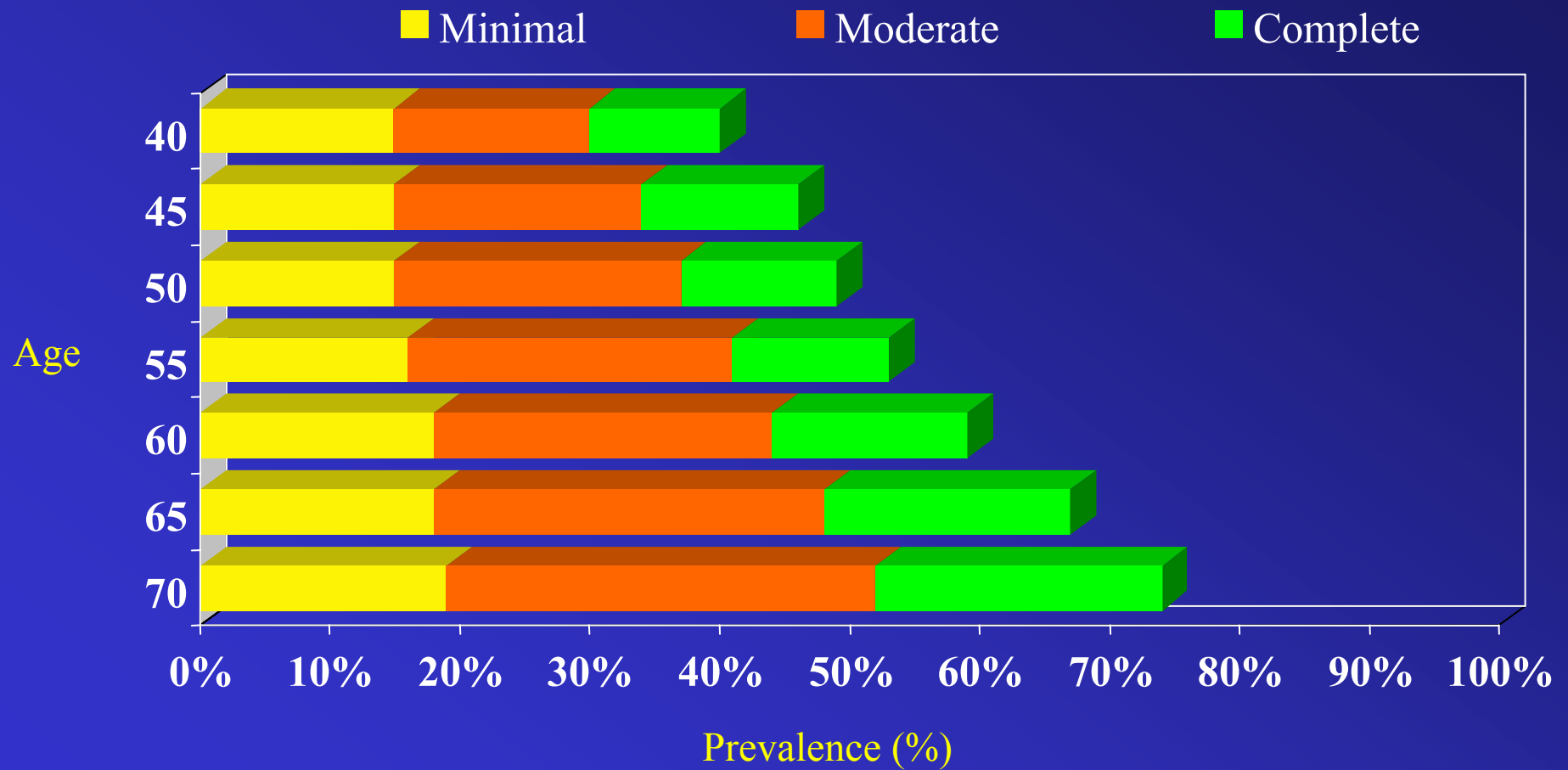
# Prevalence of Erectile Dysfunction

## 麻州男性老化研究 (MMAS, N=1,290)

40 至 70 歲的男性



# Prevalence of ED (MMAS)



*The Journal of Urology. January 1994.*

# Prevalence of Erectile Dysfunction

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## 科隆男性老化研究

(Cologne Male Survey, N=4883)

- 30-80歲男性，接受隨機抽樣問卷調查
- 1999年，在德國科隆城市中進行問卷調查
- 方法：由受訪者自行填寫勃起功能障礙評估表 (Cologne ED Questionnaire, KEED)
- 61% 的受訪者填了有效問卷 (4883 of 8000)

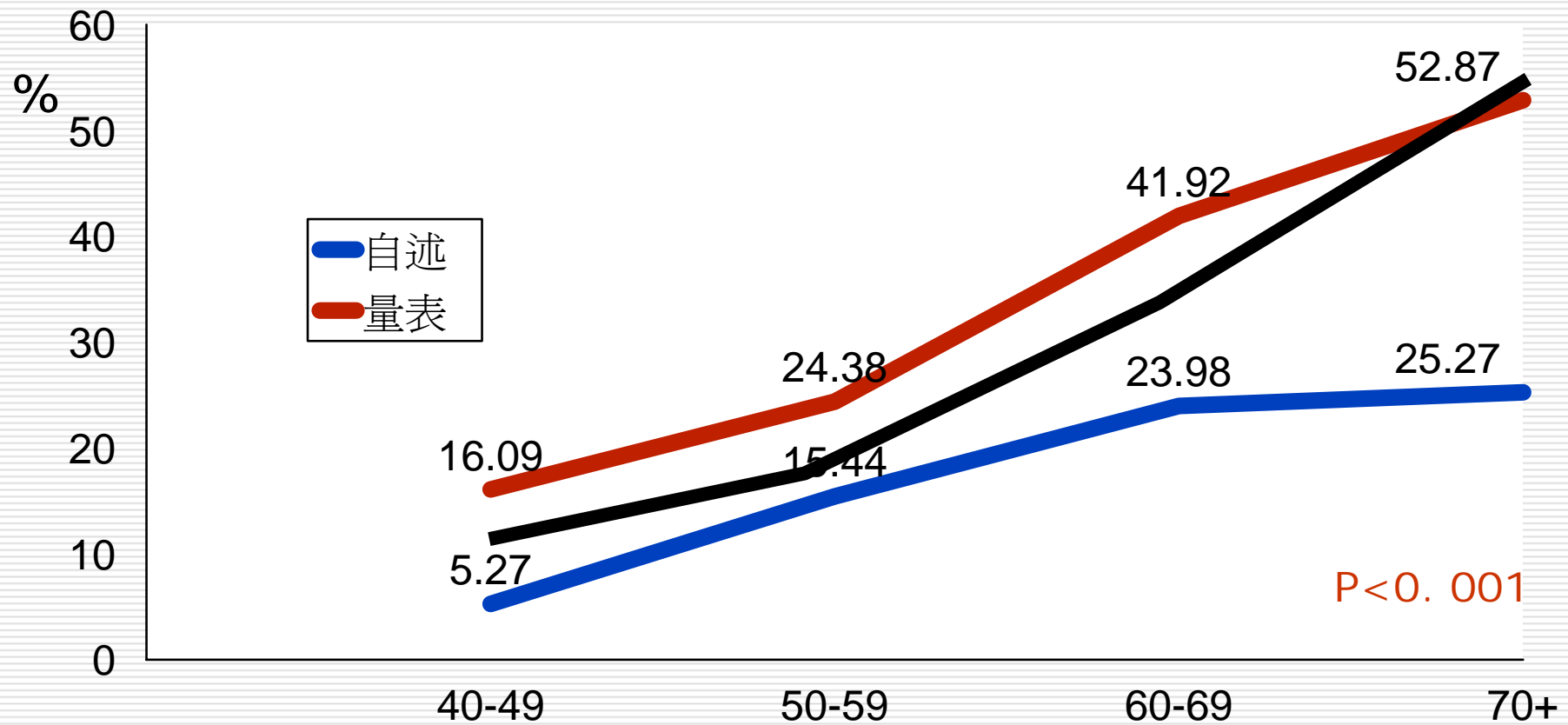


# ED Is Prevalent and Increases with Age: Cologne Male Survey (N=4883)

Age Range (y)	ED (%)	Odds Ratio (95% CI)*
30-39	2	-
40-49	10	3.7 (2.4-5.9)
50-59	16	5.2 (3.4-7.1)
60-69	34	11.0 (7.3-16.8)
70-80	53	22.4 (14.4-35.0)

\*Comparison to age 30-39.

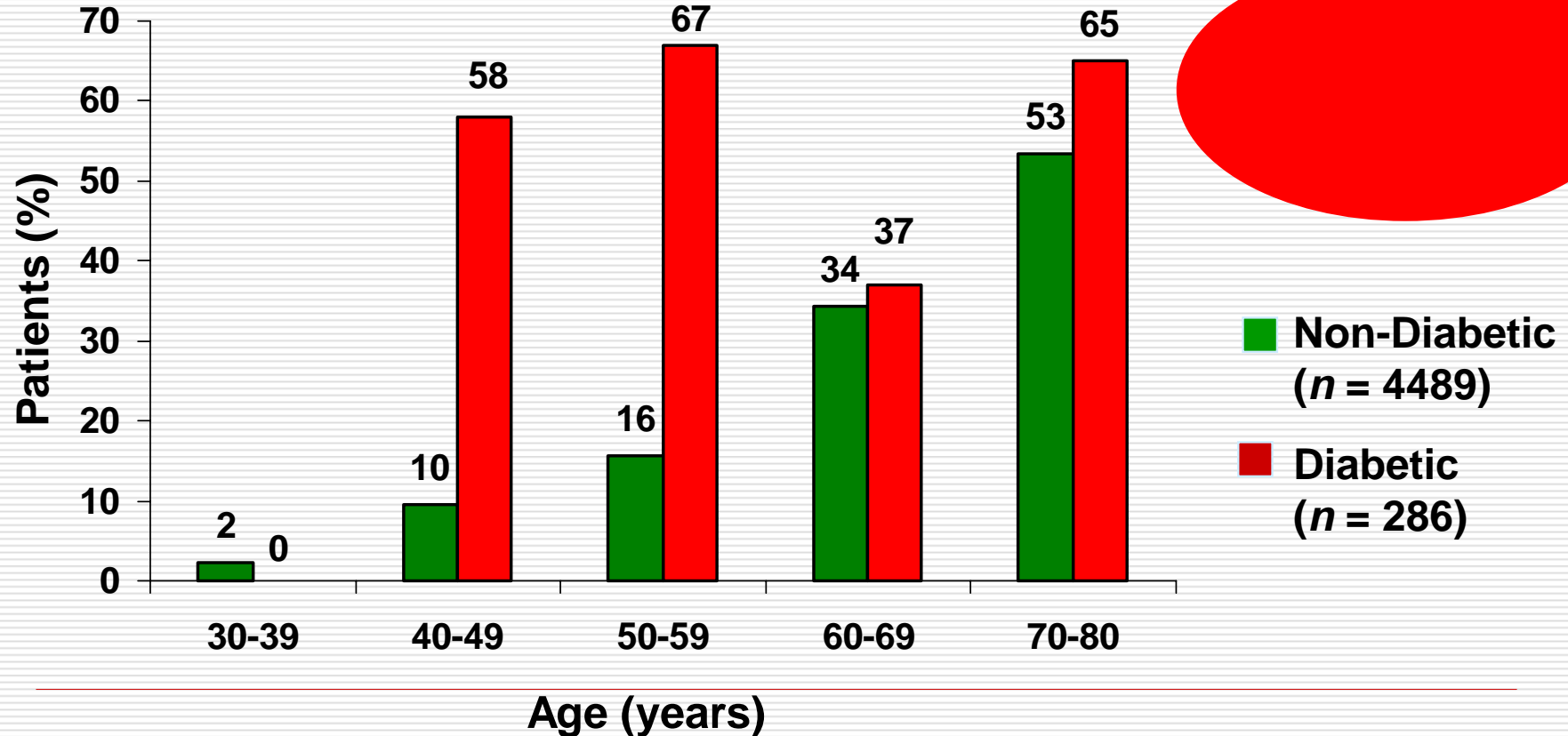
# 年齡別與台灣ED盛行率的關係



Cologne male survey age (yr)

Taiwan EDACT 2003

# Prevalence of ED in Diabetic and Non-Diabetic Subjects Cologne Male Survey



# Cologne Male Study

**Table 3** Odds ratios (OR) with 95% confidence intervals (CI) for erectile dysfunction associated with age group, pelvic surgery, lower urinary tract symptoms (LUTS), hypertension, and diabetes mellitus. All odds ratios are significantly different from 1 ( $P < 0.0001$ )

	OR	95% CI
Age 40–49 y vs 30–39 y	3.72	(2.37–5.86)
Age 50–59 y vs 30–39 y	5.16	(3.35–7.95)
Age 60–69 y vs 30–39 y	11.02	(7.26–16.75)
Age 70–80 y vs 30–39 y	22.42	(14.35–35.02)
Pelvic surgery	6.03	(4.37–8.31)
LUTS	2.11	(1.75–2.55)
Hypertension	1.58	(1.29–1.93)
	3.95	(2.98–5.23)

# Lower Urinary Tract Symptoms

## STORAGE

Frequency

Nocturia

Urgency

Urinary incontinence  
stress, urge, mixed

total incontinence

Nocturnal Enuresis...

## LUTS

## VOIDING

Slow stream

Splitting or spraying

Intermittent stream

Hesitancy

Straining

Terminal dribble

## POST-MICTURIT

Incomplete emptying feeling

Post-micturition dribble

Sexual intercourse symptom

Pelvis organ prolapse

Genital & lower urinary tract  
pain

Genital urinary tract pain  
syndromes

*P. Abrams 2002 ICS standardization*





# Multinational Study of the Aging Male (MSAM-7)

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## Objective

- To evaluate in a population of men aged 50 to 80 years
  - The incidence of lower urinary tract symptoms (LUTS), including frequency, urgency, hesitancy, poor stream, nocturia
  - Sexuality and the incidence of sexual disorders
  - The possible relationship between LUTS and sexual dysfunction

# MSAM-7

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## Methodology

## Patients

- 14,000 men aged 50 to 80 in
- 7 countries (US, UK, F, D, I, Sp, NL)
- In each country, the sample was representative of the target population

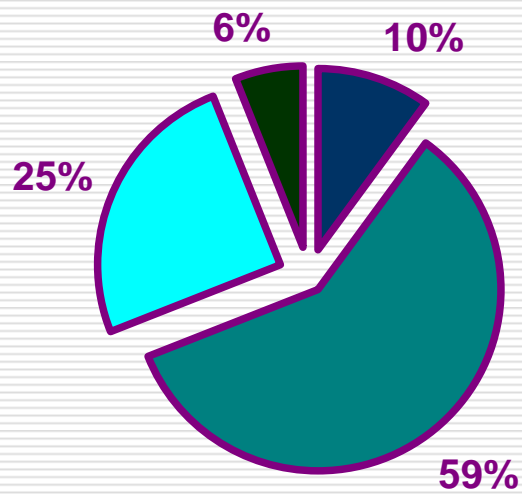
# MSAM-7

## Demographic Characteristics

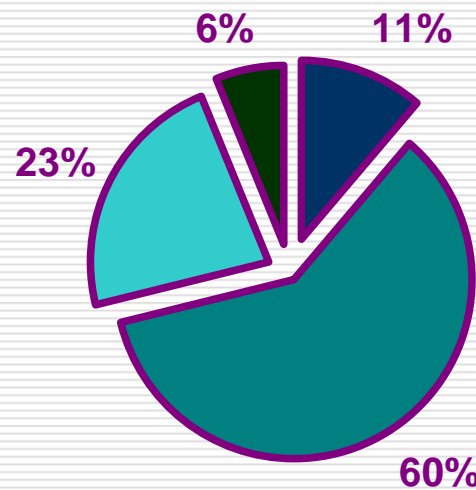
In % <i>Base:</i> Age	Total Countries <b>12815</b>	Total Europe <b>10900</b>	Total USA <b>1915</b>
50-59	<b>45</b>	<b>43</b>	<b>49</b>
60-69	<b>33</b>	<b>35</b>	<b>29</b>
70-80	<b>22</b>	<b>22</b>	<b>22</b>
<b>Co-morbidity</b>			
<b>Diabetes</b>	<b>13</b>	<b>11</b>	<b>15</b>
among them, treated	<b>87</b>	<b>88</b>	<b>86</b>
<b>Hypertension</b>	<b>33</b>	<b>29</b>	<b>38</b>
among them, treated	<b>89</b>	<b>90</b>	<b>89</b>
<b>Cardiac disease</b>	<b>17</b>	<b>15</b>	<b>18</b>
among them, treated	<b>90</b>	<b>92</b>	<b>88</b>
<b>Hyperlipidemia</b>	<b>25</b>	<b>23</b>	<b>28</b>
among them, treated	<b>76</b>	<b>67</b>	<b>85</b>

# MSAM-7

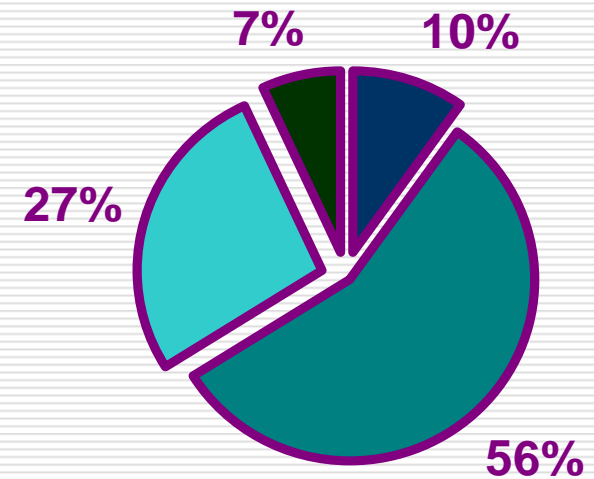
## Urinary Symptoms - I-PSS



Total countries  
12815



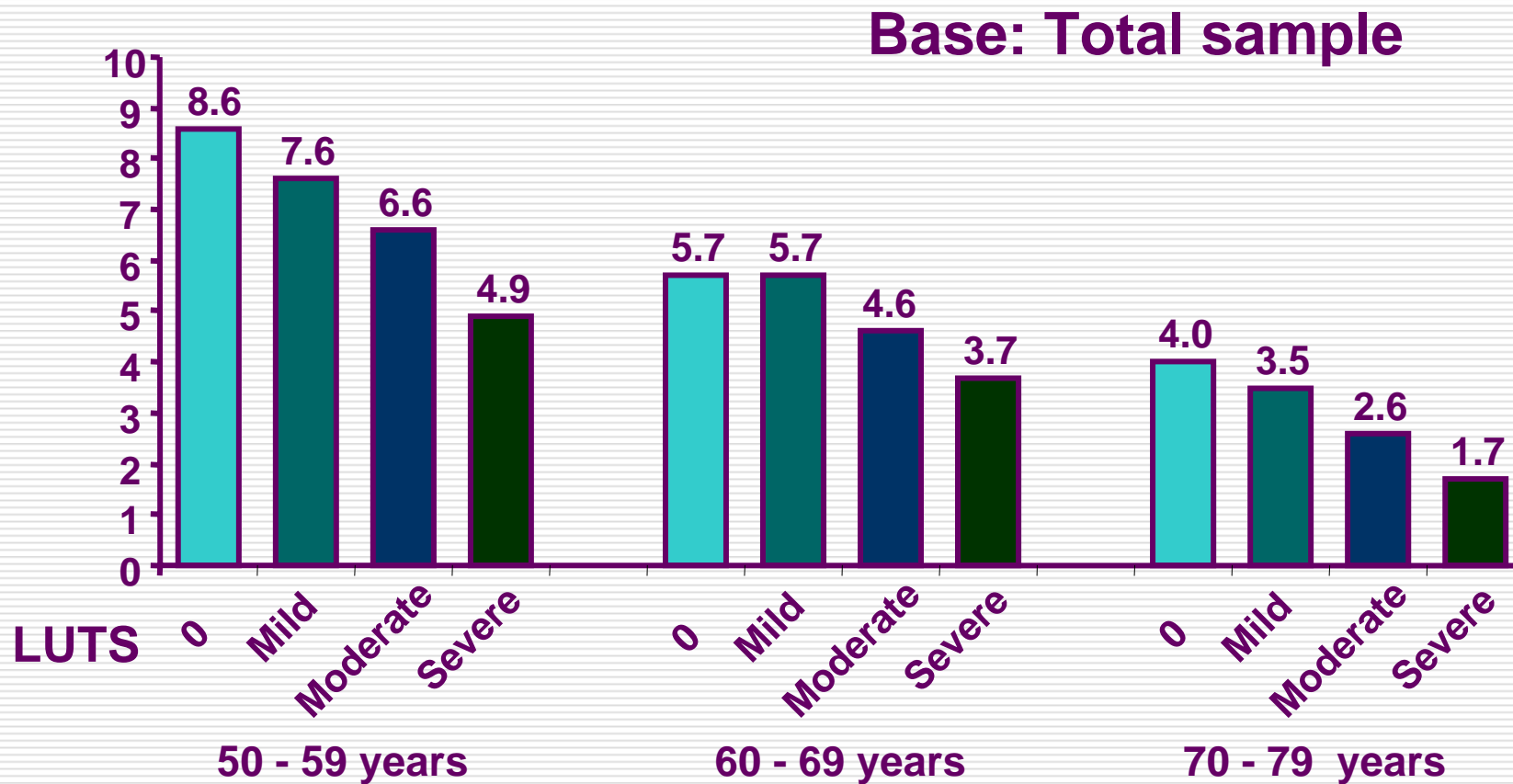
Total Europe  
10900



USA  
1915

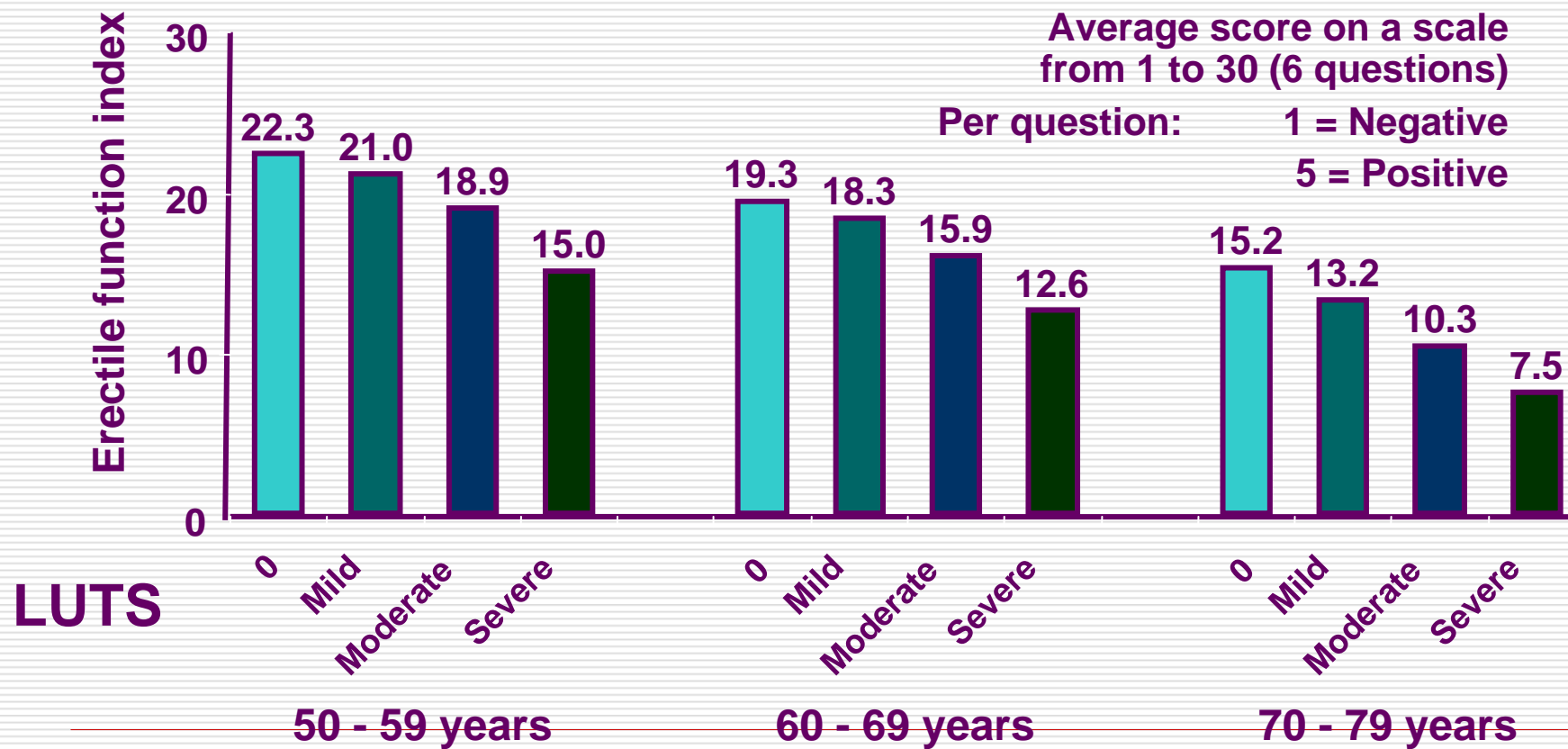


# Average Number of Sexual Intercourse or Activity per Month

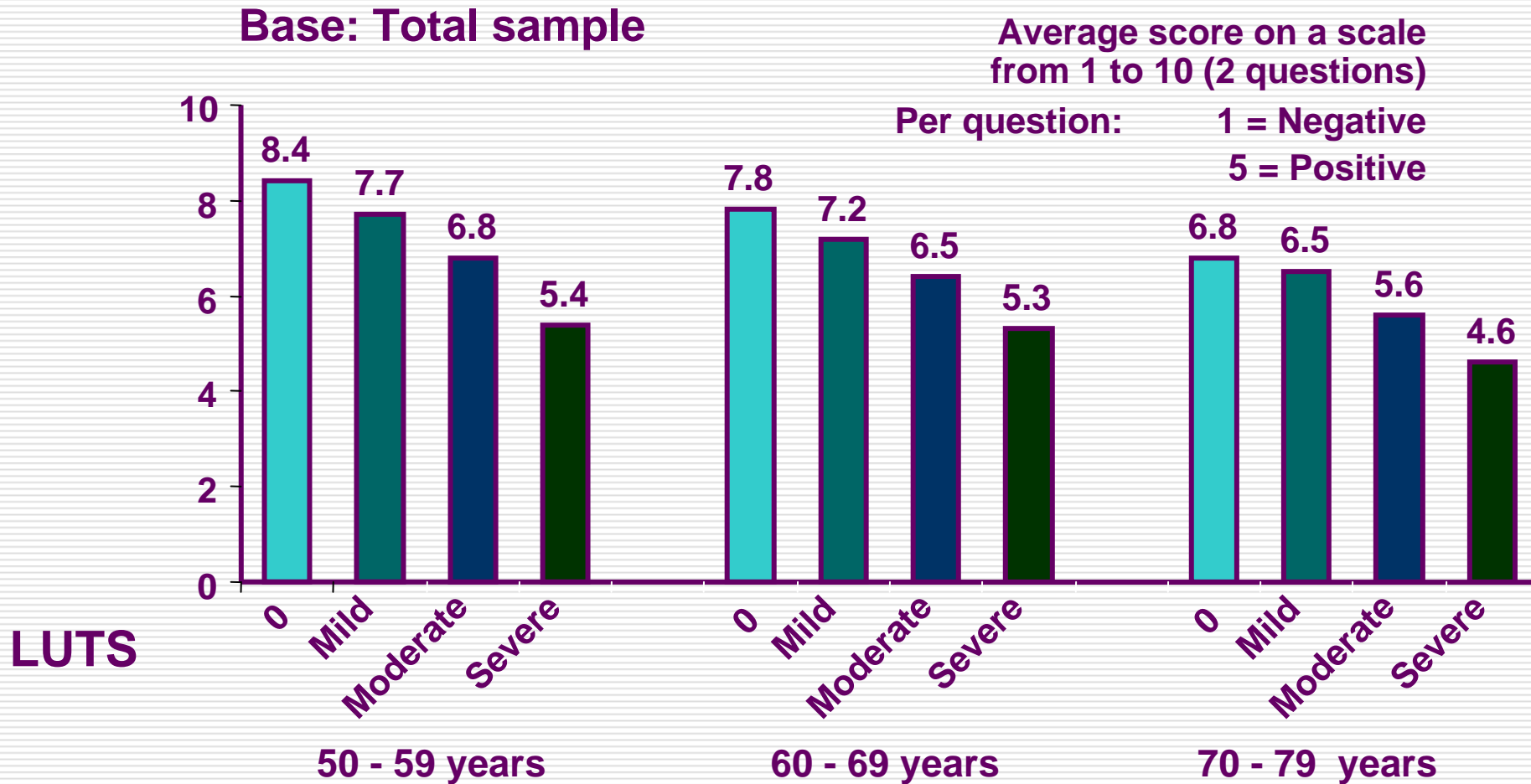


# IIEF – EF Domain

Base: Men sexually active / sexual intercourse over past 4 weeks



# IIEF - Overall Satisfaction Domain



# MSAM-7

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## Conclusion

- ❑ Older men still have an active sex life
- ❑ Severity of LUTS has an impact on sexual disorders independently of the other risk factors



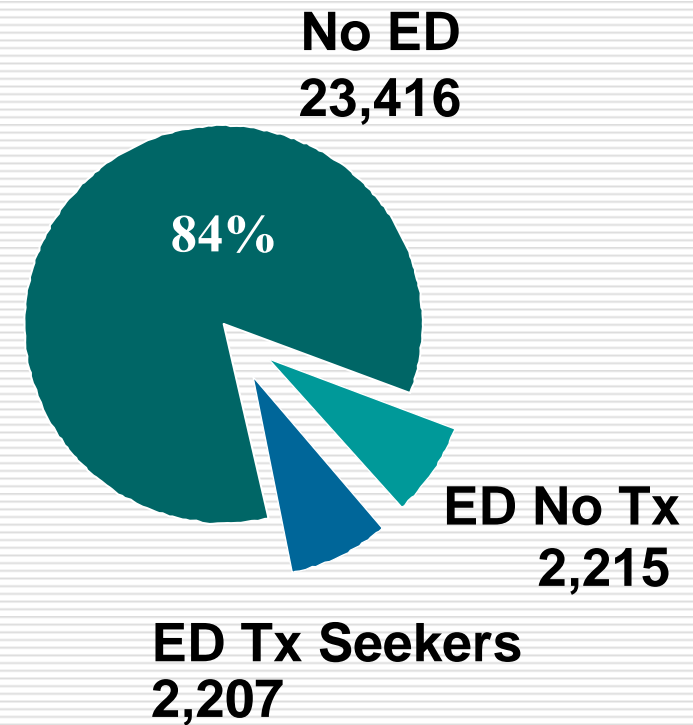
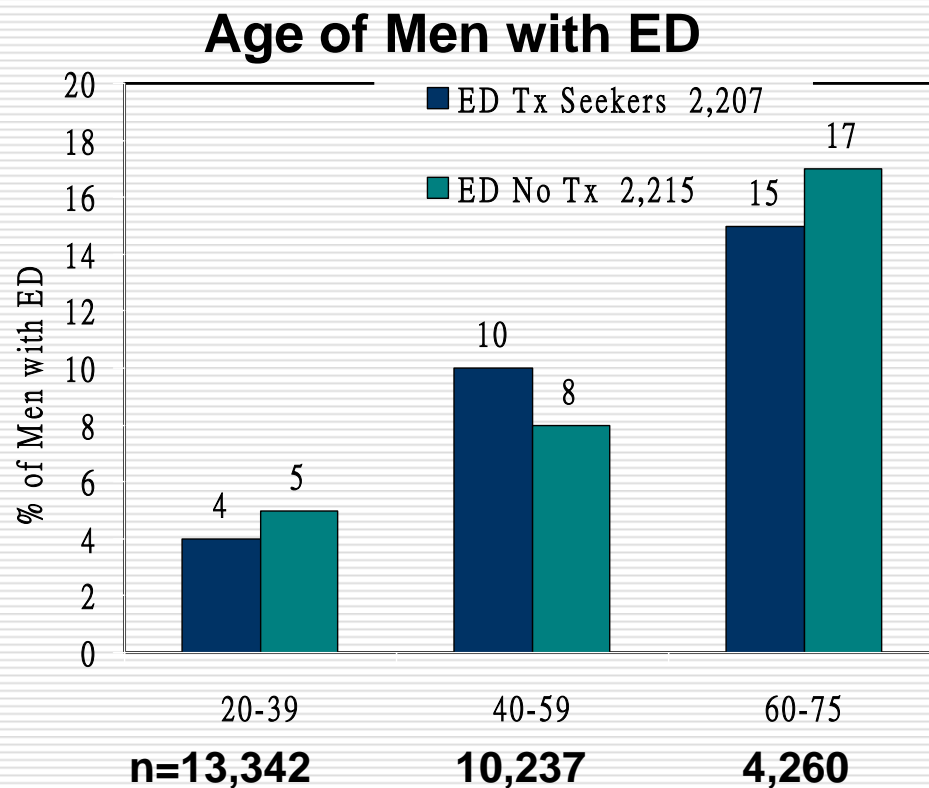
# “MALES” Study

The Men’s Attitudes to Life Events  
and Sexuality (MALES) Study

# MALES Study --Methods

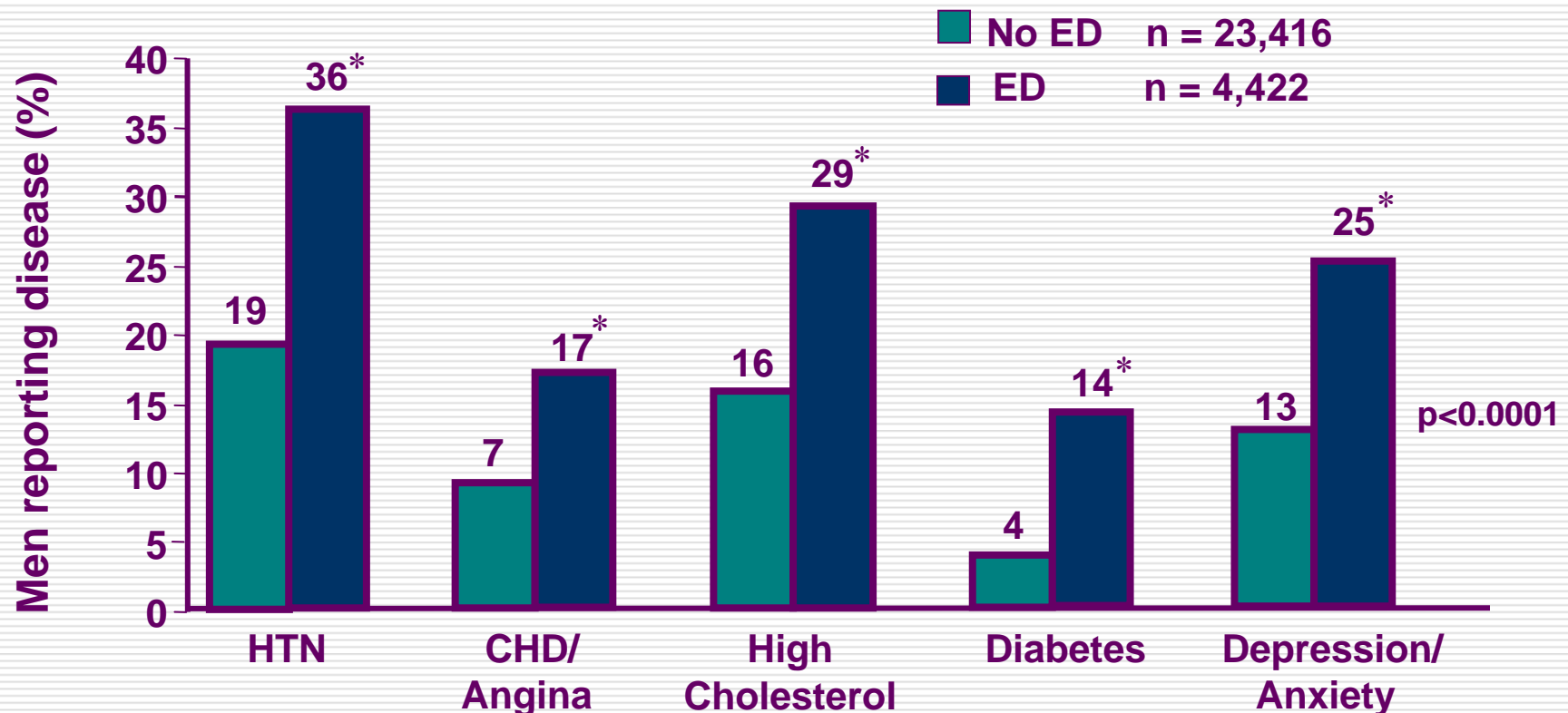
- Representative sample of adult male population, ages 20 - 75 years
- 27,838 interviews in 8 countries
  - US n=9,283
  - EU n=10,729
  - Mexico n=2,735
  - Brazil n=5,091
- Standardized questionnaire, 15 minute interview recruited via phone or random e-mail invitation
- February 2001 - April 2001

# 16% of MALES Sample Self-Report Erection Difficulties



# ED: Barometer of Men's Health

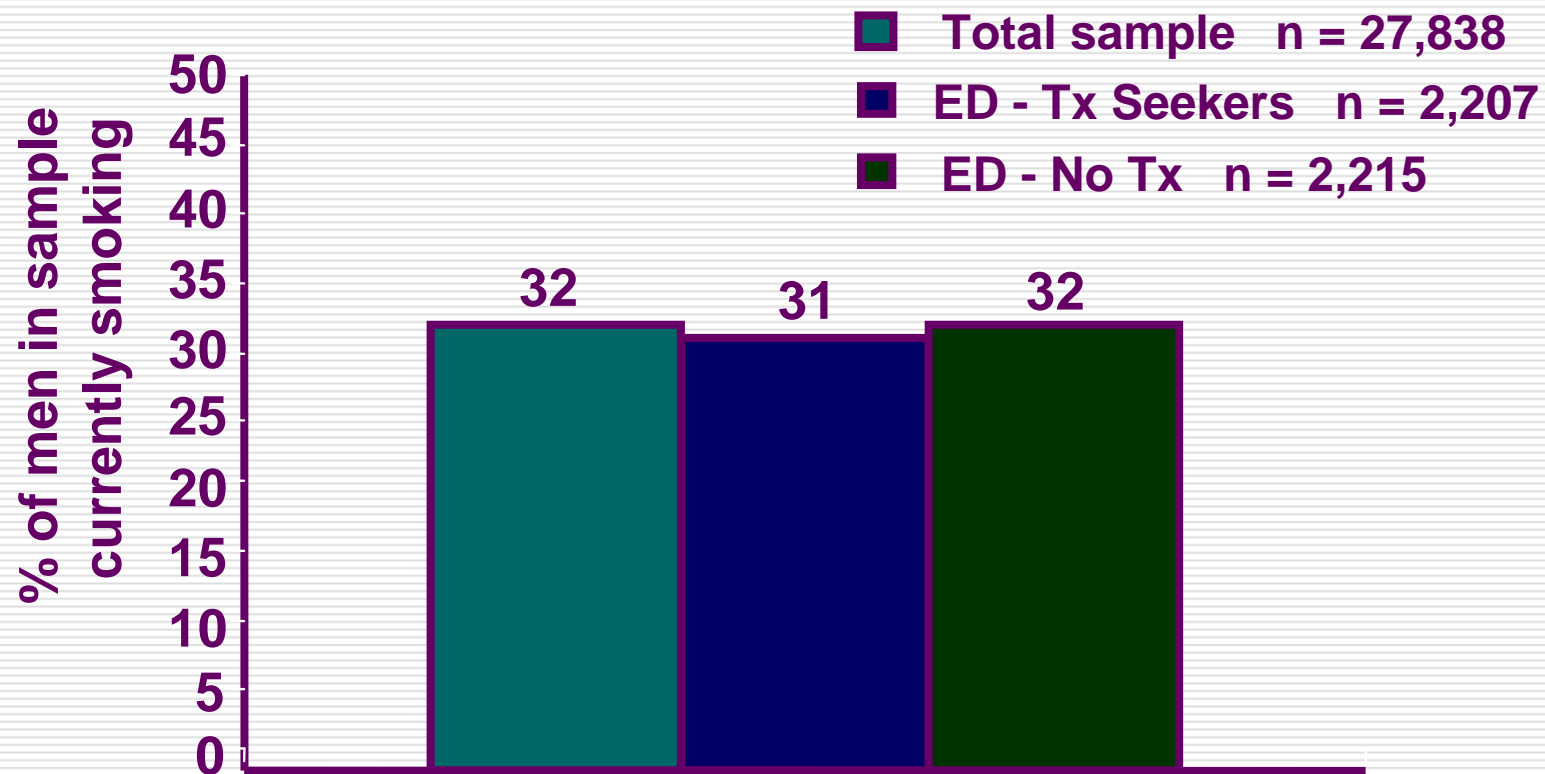
There is a higher prevalence of comorbid diseases in men with ED (MALES Study)



Note: 64% of men with ED reported at least one or more of these conditions

# ED & Smoking

No difference in smoking habits in men with ED compared to overall sample population





# Prevalence of Smoking in Asia

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WHO report: July 1, 1998 – June 30, 1999

Western Pacific Region

- Asia has the steepest rise in overall consumption of cigarettes of any WHO region
  - 60% of men and 8% of women in this WHO region smoke
  - Tobacco consumption is still rising
-



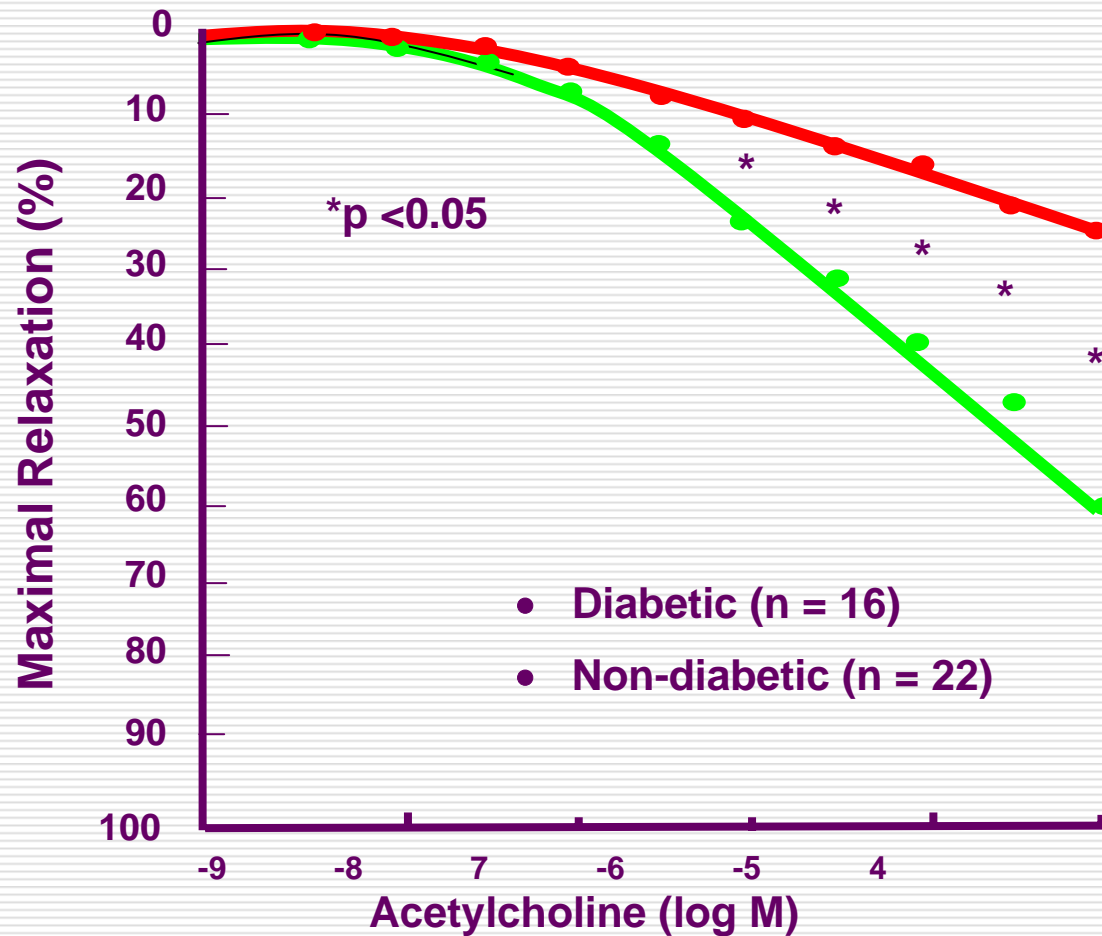
# Adult Male Smoking in Asia

Men smoking among

State / City	total male population
Cambodia	65-80%
China	70%
Hong Kong	25%
Japan	52%
Malaysia	51%
Mongolia	55%
Papua New Guinea	46%
Philippines	43%
Rep. Of Korea	> 60%
Singapore	31%
Vietnam	73%
Indonesia	60%

HM TAN, 8<sup>th</sup> Federation of Asean Urological Association Meeting, Bali, 2001.

# Impaired Endothelium-Dependent Relaxation of Corpora Cavernosa from Diabetic Men with ED





# ED and Diabetes

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- Diabetes is a common organic cause of ED
  - ED starts to develop 15 years earlier in men with diabetes
  - On average, ED develops in more than 50% of men with diabetes
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# ED: The Neglected Complication of Diabetes

- 1383 patients with Type 1 diabetes, 8373 with Type 2 diabetes from 187 centres in Italy
  - ED in Type 1 was 51%
  - ED in Type 2 was 37%
- ED was more frequent in patients with other diabetes complications
- A significantly higher percentage of men with diabetes (Type 1 and 2) aged < 45 years had ED than those aged < 45 years

# Prevalence of Undiagnosed Diabetes in Men With ED

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Andrology outpatient clinic, Lister Hospital, Stevenage, UK  
n = 129 unselected men with ED; aged 58 (36–73 years)

Known diabetes	17%
Undiagnosed diabetes ( $\geq 126$ mg/dl)	5%
Fasting blood glucose 100 – 126 mg/dl	12%

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## Incidence of Metabolic Syndrome and Insulin Resistance in ED

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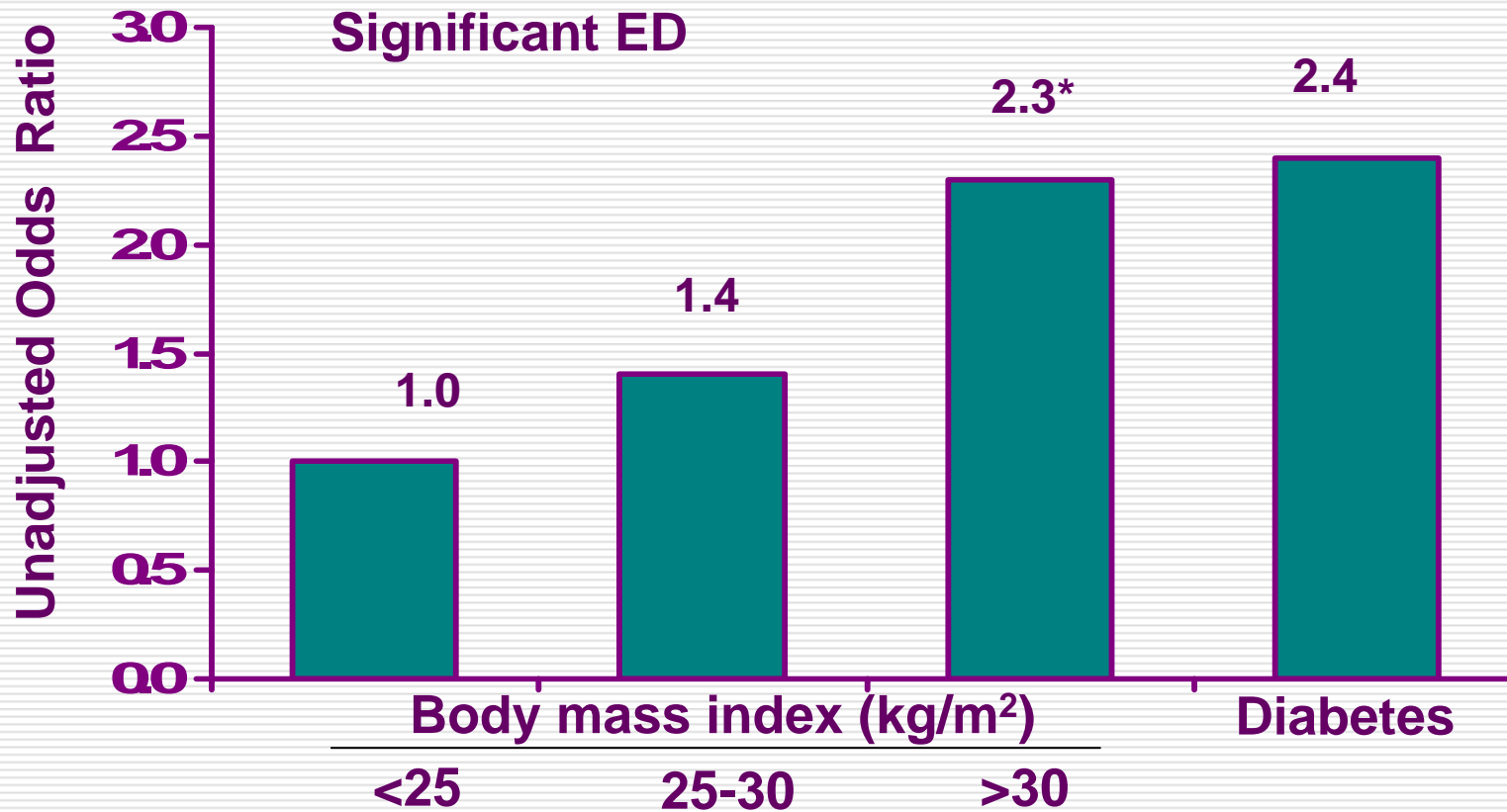
- Insulin resistance was seen in 79.2% of the ED population vs. 25% in the general population
- ED should be considered a possible risk factor for CV disease

# Global Obesity

- 
- Worldwide 8.2%
  - Least-developed countries 1.8%
  - Developing countries 4.8%
  - Emerging economies 17.1%
  - Developed-market economies 20.4%

# Obesity: A Correlate of ED

Study including 1688 Dutch men, aged 50 to 78 years  
(n = 1605 valid for analysis)



\*p < 0.05 vs reference group by bivariate logistic regression analyses

# Comorbidities: ED and Lipids

- ❑ Cooper Clinic Study, Dallas
- ❑ Patients (n = 3250; mean age = 51 years)
- ❑ Middle-aged males with total cholesterol > 240 mg/dl or HDL < 30 mg/dl were twice as likely to have ED as those with normal lipid levels
- ❑ High total cholesterol and low HDL cholesterol = increased ED risk
- ❑ Each mmol/liter increase in total cholesterol = 1.32 times ED risk



# The COBRA Trial

- 
- ❑ Study conducted in 162 men with CAD to correlate ED with different clinical presentations of CAD
  - ❑ In patients with chronic angina ED onset occurred *before* CAD onset in 71% – mean interval of 25 months
  - ❑ AMI and vessel disease are predictors of ED
  - ❑ Having ED in patients with acute MI was associated with a 6-fold risk of having multivessel disease independent of other risk factors



# Prostate Cancer Prevention Trial

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- ❑ Men aged 55 and older who were randomized to placebo in the Prostate Cancer Prevention Trial (n=9457) were evaluated every 3 months for ED and CVD between 1994 and 2003
- ❑ Proportional hazards regression models were used to evaluate the association of ED and CVD
- ❑ At entry 8063 (85%) had no CVD
- ❑ Of the 4247 without ED at entry, 2420 (57%) had ED after 5 years



# Prostate Cancer Prevention Trial

- Incident erectile dysfunction was associated with a hazard ratio of 1.25 (95% confidence interval) for subsequent cardiovascular events during study follow up
- For subsequent cardiovascular events, the unadjusted risk of an incident cardiovascular event was 0.015 per person year for men without ED at entry and 0.024 per person year for men with ED at study entry

**This association was in the range of risk associated with current smoking or a family history of MI**



# Major Risk Factors for ED

## Aging

- Progressive decline in function
- Psychological issues

## Chronic diseases

- Hypertension
- Diabetes
- Depression
- Cardiovascular disease

## Medications

### ■ Antihypertensives

#### Thiazide diuretics

#### Beta-blockers

### ■ Antidepressants

#### Serotonin re-uptake inhibitors

## Unhealthy lifestyle

### ■ Stress

### ■ Alcohol abuse

### ■ Smoking

# 勃起障礙與許多常見的疾病有關

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## 勃起障礙在不同病患族群中的罹患率

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<input type="checkbox"/> 高血壓	<b>52%</b>
<input type="checkbox"/> 週邊血管疾病	<b>86%</b>
<input type="checkbox"/> 糖尿病	<b>64%</b>
<input type="checkbox"/> 動脈粥狀硬化	<b>40%</b>
<input type="checkbox"/> 嚴重憂鬱症	<b>90%</b>
<input type="checkbox"/> 缺血性心臟病	<b>61%</b>

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# MAJOR RISK FACTORS FOR ED. CHRONIC Diseases

## Chronic Disease

## Increased ED Risks\*

<b>Diabetes<sup>1,2</sup></b>	<b>× 4.1</b>
<b>Prostate disease<sup>1†</sup></b>	<b>× 2.9</b>
<b>Peripheral vascular disease<sup>1</sup></b>	<b>× 2.6</b>
<b>Cardiac problems<sup>1</sup></b>	<b>× 1.8</b>
<b>Hyperlipidemia<sup>1</sup></b>	<b>× 1.6</b>
<b>Hypertension<sup>1,2</sup></b>	<b>× 1.6</b>
<b>Depression<sup>3,4</sup></b>	<b>× 1.8</b>

\*Age-adjusted odds ratio.

†Prostatic symptoms on the I-PSS questionnaire.

1. Martin-Morales A et al. *J Urol.* 2001;166:569-575.
2. Braun M et al. *Int J Impot Res.* 2000;12:305-311.
3. Goldstein I. *Am J Cardiol.* 2000;86(suppl):41F-45F.
4. Feldman HA et al. *J Urol.* 1994;151:54-61.



# ED Is Associated With Serious Treatable Disorders

- ❑ 60% of men with ED have dyslipidemia
- ❑ 56% of men with ED have a positive stress test
- ❑ 40% of men with ED have significant coronary occlusions
- ❑ 20% of men with ED have diabetes mellitus
- ❑ 11% of men with ED have depression

Billups K, Friedrich S. Presented at: AUA; May 2000; Atlanta, Ga. *J Urol.* 2000;163(4) Abstract 655.

Braun M et al. *Int J Impot Res.* 2000;12:305-311.

Burchardt M et al. *J Urol.* 2000;164:1188-1191.

Levine L, Kloner R. *Am J Cardiol.* 2000;86:1210-1213.

Pritzker MR. *Circulation.* 1999;100(suppl I):I-711. Abstract 3751.

Seftel A. *J Urol.* 2004;171:2341-2345.

# Conclusions

- ❑ ED is associated with a high prevalence of comorbid conditions
- ❑ Hypertension, heart disease, and diabetes are especially strongly associated with ED
- ❑ ED may function as marker for atherosclerosis
- ❑ Consider ED for patients consulting for these conditions *and consider these conditions amongst those with ED*