Erectile dysfunction in Type 1 and Type 2 diabetics in Italy

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Background

➢ Scarce comparative information on ED prevalence in the two different types of diabetics

➢ No comparative data with regard to risk factors

➢ No Italian epidemiological data

Methods

Eligible for the study were men aged 20-69 years with a diagnosis of IDDM or NIDDM who were observed on randomly selected days in 178 diabetic centres

Methods

Data collected:

- ➤ sigarette smoking
- ➤ weekly alcohol consumption
- ➤ diabetic pathology and treatment
- ➤ diabetes-related complications
- ➤ selected medical history
- ➤ current medications

Methods

ED was defined as a failure to achieve and maintain an erection sufficient for satisfactory sexual performance

➢*Incomplete ED: only some sexual performances were considered unsatisfactory*

➢*Complete ED: all sexual performances were considered unsatisfactory*

Methods

➢ *Smoker definition: subjects who had smoked more than one sigarette per day for at least one year*

➢ *Ex-smoker definition: subjects who had smoked more than one sigarette per day for at least one year but had stopped more than one year before the interview*

Methods

Metabolic control definition

➢ *Good, glycosylated hemoglobin <7.5%*

➢ *Fair, glycosylated hemoglobin from 7.5% to 9%*

➢ *Poor, glycosylated hemoglobin >9%*

Results

10.157 men identified

289 (2.8%) refused to participate

9868 men interviewed

1383 men were type 1 (14%)

8373 men were type 2 (86%)

Results

Age distribution of Type 1 subjects

Age (years)	Type 1	
	Total subjects	Rate of ED / 100 men
≤ 45	884	13 (12-16)
46-55	267	43 (36-54)
56-65	188	54 (44-66)
≥ 66	44	66 (43-99)
Total	1383	51 (42-55)

Results

Age distribution of Type 2 subjects

Age (years)	Type 2	
	Total subjects	**Rate of ED / 100 men**
≤ 45	677	16 (13-20)
46-55	2260	29 (27-31)
56-65	3975	42 (40-44)
≥ 66	1461	49 (46-53)
Total	8373	37 (36-38)

Results
Age distribution and prevalence of ED in 2,010 men studied, Italy 1996

Age (years)	Men	Percent with ED (95% IC)
18-29	281	2.1 (1.0-5.7)
30-39	427	1.9 (1.0-4.4)
40-49	483	4.8 (3.2-7.6)
50-59	343	15.7 (11.9-21.2)
60-70	298	26.8 (21.5-33.8)
> 70	178	48.3 (38.8-60.9)
Total	**2,010**	**12.8 (11.3-14.6)**

Results

Distribution of Type 1 subjects according to the level of metabolic control

Metabolic control	Type 1		OR (95% CI)
	With ED No (%)	**Without ED No (%)**	
Good	117(21)	440(79)	1
fair	140(28)	355(72)	1.5(1.0-2.1)
poor	104(32)	223(68)	1.8(1.3-2.4)
$X^2$1 trend			11.5(P=0.0007)

Results

Distribution of Type 2 subjects according to the level of metabolic control

Metabolic control	Type 2		OR (95% CI)
	With ED No (%)	**Without ED No (%)**	
Good	1287(30)	2973(70)	1
fair	1153(43)	1538(57)	1.7(1.6-1. 9)
poor	695(49)	727(51)	2.3(2.0-2.6)
$X^2$1 trend			202.5(P=0.0001)

Results

Distribution of Type 1 subjects according to the duration of diabetes

Duration of diabetes (years)	Type 1		OR (95% CI)
	With ED No (%)	Without ED No (%)	
1-5	43(15)	244(85)	1
6-10	42(16)	229(85)	0.9(0.6-1.5)
11-30	271(34)	536(66)	1.9(1.3-2.8)
$X^2$1 trend			16.9(P=0.0001)

Results

Distribution of Type 2 subjects according to the duration of diabetes

Duration of diabetes (years)	Type 2		OR (95% CI)
	With ED No (%)	Without ED No (%)	
1-5	765(27)	2039(73)	1
6-10	851(36)	1521(64)	1.4(1.2-1.5)
11-30	1464(48)	1612(52)	2.0(1.8-2.2)
$X^2 1$ trend			143.4(P=0.0001)

Results

Distribution of Type 1 subjects according to the smoking habit

Smoking	Type 1		OR$^\alpha$ (95% CI)
	With ED No (%)	Without ED No (%)	
Non-smokers	108(19)	474(81)	1
Current smokers	134(28)	340(72)	1.6(1.1-2.2)
Ex-smokers	119(36)	208(64)	1.3(1.0-2.9)

α **Odds ratio, adjusted for age and duration of diabetes**

Results

Distribution of Type 2 subjects according to the smoking habit

Smoking	Type 2		OR$^\alpha$ (95% CI)
	With ED No (%)	Without ED No (%)	
Non-smokers	750(31)	1655(69)	1
Current smokers	893(38)	1485(62)	1.4(1.3-1.6)
Ex-smokers	1492(42)	2098(58)	1.4(1.3-1.6)

α **Odds ratio, adjusted for age and duration of diabetes**

Results

Distribution of Type 1 subjects according to the duration of smoking habit

Duration of smoking (years)	Type 1		OR $^{\alpha}$ (95% CI)
	With ED No (%)	Without ED No (%)	
<20	68(20)	276(80)	1
20-24	49(33)	99(67)	1.5(0.9-2.3)
25-34	54(41)	77(59)	1.3(0.7-2.6)
≥35	54(61)	34(39)	2.1(1.1-3.8)
$X^2 1$ trend			5.2(P=0.022)

α **Odds ratio, adjusted for age and duration of diabetes**

Results

Distribution of Type 2 subjects according to the duration of smoking habit

Duration of smoking (years)	Type 2		OR $^{\alpha}$ (95% CI)
	With ED No (%)	Without ED No (%)	
<20	273(30)	637(70)	1
20-24	355(36)	628(64)	1.3(1.1-1.6)
25-34	671(40)	1017(60)	1.4(1.2-1.6)
≥35	845(47)	969(53)	1.6(1.1-1.9)
$X^2$1 trend			17.2(P=0.0001)

α **Odds ratio, adjusted for age and duration of diabetes**

Results

Distribution of Type 1 subjects according to the number of cigarettes smoked per day

Cigarettes smoked per day	Type 1		OR $^\alpha$ (95% CI)
	With ED **No (%)**	**Without ED** **No (%)**	
<12	58(25)	174(75)	1
12-19	36(25)	107(75)	1.0(0.6-1.6)
20-29	96(38)	160(62)	1.8(1.2-2.7)
$\geq$30	51(38)	83(62)	1.7(1.1-2.8)
$X^2$1 trend			9.3(P=0.0030)

α **Odds ratio, adjusted for age and duration of diabetes**

Results

Distribution of Type 2 subjects according to the number of cigarettes smoked per day

Cigarettes smoked per day	Type 2		OR α (95% CI)
	With ED No (%)	Without ED No (%)	
<12	462(236)	815(64)	1
12-19	306(40)	474(61)	1.2(1.0-1.5)
20-29	774(40)	1180(60)	1.3(1.1-1.6)
≥30	762(43)	994(57)	1.5(1.3-1.7)
$X^2 1$ trend			22.7(P=0.0001)

α **Odds ratio, adjusted for age and duration of diabetes**

Results
Distribution of Type 1 subjects according to alcohol consumption

Alcohol consumption$^\beta$	Type 1		OR $^\alpha$ (95% CI)
	With ED No (%)	Without ED No (%)	
none	127(23)	414(77)	1
1-7	80(24)	249(76)	1.1(0.8-1.5)
8-14	60(25)	176(75)	0.9(0.6-1.3)
15-21	32(28)	81(72)	1.1(0.7-1.5)
≥ 22	62(38)	102(62)	1.3(0.9-2.0)
$X^2$1 trend			0.5(P=0.4595)

α Odds ratio, adjusted for age and duration of diabetes
β Defined as the simple sum of glass drunk per week of wine, beer or spirits

Results
Distribution of Type 2 subjects according to alcohol consumption

Alcohol consumption [β]	Type 2		OR [α] (95% CI)
	With ED No (%)	**Without ED No (%)**	
none	1026(38)	1675(62)	1
1-7	649(37)	1082(63)	0.9(0.8-1.1)
8-14	601(37)	1024(63)	0.9(0.8-1.0)
15-21	283(38)	467(62)	1.0(0.7-1.2)
≥22	576(37)	990(63)	0.9(0.8-1.0)
$X^2 1$ trend			3.8(P=0.0526)

[α] **Odds ratio, adjusted for age and duration of diabetes**
[β] **Defined as the simple sum of glass drunk per week of wine, beer or spirits**

Results

Medications associated with a significant increased risk of ED in both type subjects:

➢ *Anxiolytics*

➢ *Antihypertensives*

➢ *Cardiovascular drugs*

➢ *Diuretics*

➢ *H2 antagonist*

Comparison of main results from epidemiological studies on prevalence of erectile dysfunction (ED) in Type 1 and Type 2 diabetic subjects versus our results

Type of diabetes	Authors (years)	Subjects No	Age	% ED
Type 1	*McCulloch et al. (1980)*	318	20-59	36
	Our data	1253	20-59	22
	Brunmer et al. (1995)	59	18-67	49
	Klein et al. (1996)	359	21-76	20
	Klein (1996)		≥43	47
	Our data	585	≥43	46
	Our data	**1383**	**20-70**	**26**
Type 2	*McCulloch et al (1980)*	221	20-59	35
	Our data	4402	20-59	31
	Nathan et al. (1986)	125	55-74	71
	Our data	5814	55-70	43
	Our data	**8373**	**20-70**	**37**

Conclusions

➢*The risk of ED for both groups is influenced by age*

➢*Different prevalence of ED between the two diabetic subgroup subjects of the same age*

➢*Important role of some factors susceptible to intervention*

Back up

Results

Distribution of Type 1 and Type 2 subjects according to the use of Antidepressants

Antidepressants	Type1		OR$^{\alpha}$ (95% CI)
	With ED No (%)	Without ED No (%)	
No	355(26)	1014(74)	1
Yes	6(43)	8(57)	1.6(0.5-5.1)

Antidepressants	Type 2		OR$^{\alpha}$ (95% CI)
	With ED No (%)	Without ED No (%)	
No	3082(37)	5188(63)	1
Yes	53(51)	50(48)	1.9(1.3-2.8)

α **Odds ratio, adjusted for age**

Results

Distribution of Type 1 and Type 2 subjects according to the use of Antihypertensives

Antihypertensives	Type1		OR$^\alpha$ (95% CI)
	With ED No (%)	Without ED No (%)	
No	292(24)	946(76)	1
Yes	69(48)	76(52)	1.6(1.1-2.4)

Antihypertensives	Type 2		OR$^\alpha$ (95% CI)
	With ED No (%)	Without ED No (%)	
No	2140(35)	3932(65)	1
Yes	995(43)	1306(57)	1.2(1.1-1.3)

α **Odds ratio, adjusted for age**

Results

Distribution of Type 1 and Type 2 subjects according to the use of Cardiovascular drugs

Cardiovascular drugs	Type1		OR$^{\alpha}$ (95% CI)
	With ED No (%)	Without ED No (%)	
No	310(24)	997(76)	1
Yes	51(67)	25(33)	3.8(2.2-6.5)

Cardiovascular drugs	Type 2		OR$^{\alpha}$ (95% CI)
	With ED No (%)	Without ED No (%)	
No	2571(35)	4752(65)	1
Yes	564(54)	486(46)	1.8(1.6-2.1)

α **Odds ratio, adjusted for age**

Results

Distribution of Type 1 and Type 2 subjects according to the use of H2 receptor antagonist

H2 receptor antagonist	Type1		OR$^\alpha$ (95% CI)
	With ED No (%)	**Without ED No (%)**	
No	345(25)	1012(75)	1
Yes	16(61)	10(38)	2.8(1.1-6.7)

H$_2$ receptor antagonist	Type 2		OR$^\alpha$ (95% CI)
	With ED No (%)	**Without ED No (%)**	
No	3017(37)	5101(63)	1
Yes	118(46)	137(54)	1.3(1.0-1.7)

α **Odds ratio, adjusted for age**