Subsequent cardiovascular disease and mortality in men with erectile dysfunction

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Introduction and Aim

- Erectile dysfunction (ED) is seen as a precursor of cardiovascular disease (CVD)
- Aim: To investigate the incidence of subsequent CVD and the cause of mortality in men who presented with ED

Materials and Methods

- From 1999 to 2011
- A total of 4,715 subjects who received PDE5 inhibitors for the treatment of ED
- Reviewing medical charts for the comorbidits and cause of mortality
- A structure telephone interviewing for those who did not have follow-up visits
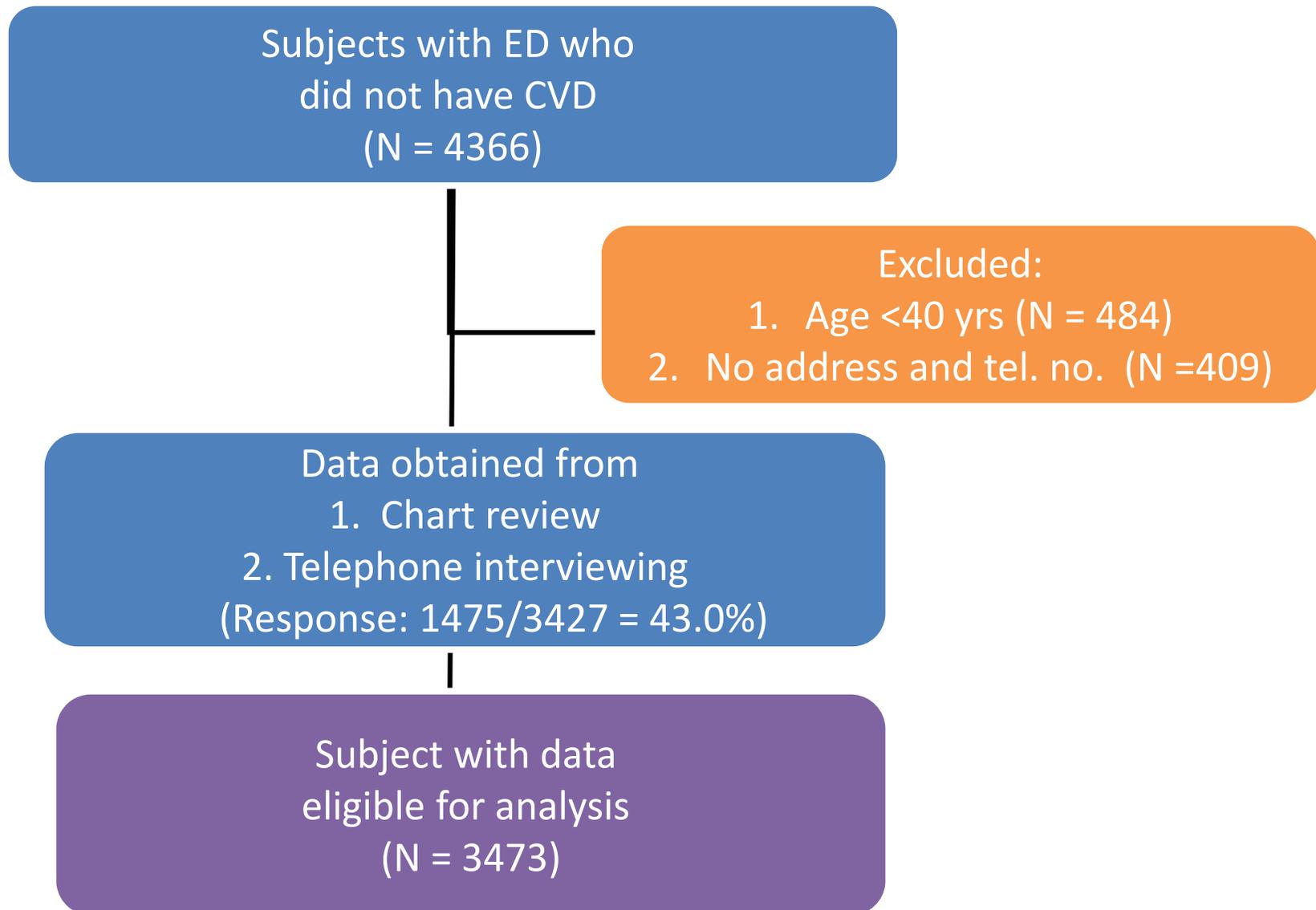- Institutional Review Board approved the study protocol

Demographic data of ED participants, 1999-2011

Variables	Results (N = 4713)
Age, years	59.0 ± 14.0 (19–91)
Body mass index	24.7 ± 3.4 (13.6–44.0)
Active or quitted smoker	41.0% (1424)
Diabetes	25.8% (1212)
hypertension	39.7% (1897)
Dyslipidemia	21.9% (1028)
CV diseases	7.4% (347)
Coronary artery disease	3.4% (161)
Acute myocardial infarction	0.9% (42)
Cerebro-vascular accident	2.7% (127)
Peripheral arterial occlusive disease	0.4% (17)

Comparison of participants with ED who had CVD and who did not at the first presentation for ED

Variables	Having CVDs already at initial presentation for ED (N = 347)	Free of CVDs at initial presentation for ED (N = 4366)	*P*-Value
Age, years	66.1 ± 10.4 (28–88)	58.4 ± 14.1 (19–91)	<0.001
Body mass index, kg/m²	24.8 ± 3.5 (14.2–36.8)	24.7 ± 3.4 (13.6–44.0)	0.683
Diabetes	44.1%	24.3%	<0.001
hypertension	71.8%	37.8%	<0.001
Dyslipidemia	40.9%	20.4%	<0.001
Active or quitted smoker	50.0%	41.7%	<0.001

Flow diagram of study participants

Subjects with ED who
did not have CVD
(N = 4366)

Excluded:
1. Age <40 yrs (N = 484)
2. No address and tel. no. (N =409)

Data obtained from
1. Chart review
2. Telephone interviewing
(Response: 1475/3427 = 43.0%)

Subject with data
eligible for analysis
(N = 3473)

Demographic data of study participants

Variables	Results (n = 3473)
Age, years	62.2 ± 11.2 (40–91)
Body mass index, kg/m^2	24.6 ± 3.4 (13.8–41.4)
Comorbidities	
Diabetes	27.6%
Hypertension	43.8%
Dyslipidemia	22.0%
Active or quitted smoker	40.5%

Mean follow-up interval (from the date of last visit to the date of follow-up): 82.5 ± 51.8 months (1-173)

Incidence of CVD stratified by age groups

- Incidence of major CVDs: 316/3473 = 9.1%

  CAD 3.9% (134), AMI 0.9% (30), CVA 3.7% (130), and PAOD 0.6% (22)

- Time-temporal between ED and CAD: 58.7 $\pm$ 36.4 months (1-170)

Age group, yrs	Subsequent CVD (N = 316)	No subsequent CVD (N = 3157)	P-value
40-49	3.3% (19)	96.7% (557)	<0.001
50-59	7.3% (62)	92.7% (787)	
60-69	10.3% (92)	89.7% (801)	
$\geqq$70	12.4% (143)	87.6% (1012)	

Time-temporal between ED and CVD among age groups

- No significant difference in the time-temporal of developing CVD after ED visit among the age groups (Breslow test: $p = 0.168$)
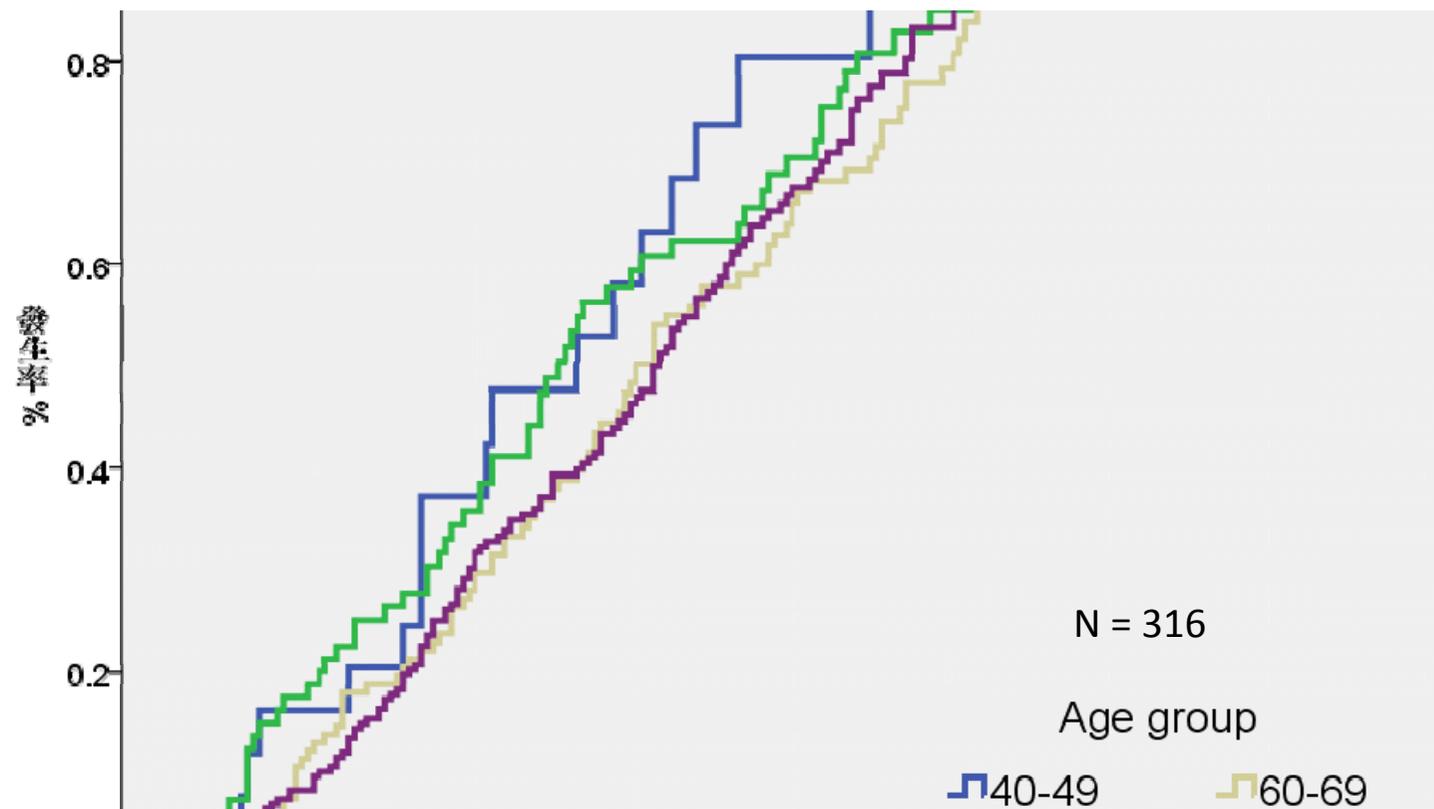
Comparison of subjects who developed subsequent major CVDs and who did not

Variables	Subsequent CVD (N = 316)	No subsequent CVD (N = 3157)	P-Value
Age	66.1 ± 9.6 (41–88)	61.8 ± 11.3 (40–91)	<0.001
Body mass index	24.2 ± 3.1 (15.6–34.5)	24.7 ± 3.4 (13.8–41.4)	0.019
Diabetes	46.8%	25.7%	<0.001
Hypertension	71.2%	41.0%	<0.001
Dyslipidemia	30.7%	21.1%	<0.001
Active or quitted smoker	40.1%	40.5%	0.197

The leading causes of mortality of men with ED

Variables	Results* (N = 3801)
Malignancy	105 (2.7%)
Infection	58 (1.5%)
CVD	38 (1.0%)
Congestive heart failure	16 (0.4%)
Trauma	8 (0.2%)
Uremia	6 (0.1%)
Others or unknown	167 (4.4%)
All-cause mortality	293 (7.7%)

- Those who had CAD before presentation of ED included
- Mean age of mortality at diagnosis of ED 67.5 ± 8.9 yrs (41-870
  mean interval from presentation of ED to mortality 77.2 ± 41.5 months

Conclusions

- Of the study cohort, the incidence of developing subsequent CVD is 9.1% with an interval between ED and CVD of 58.7 months

- The independent risk factors for developing subsequent CVD include an older age, DM, hypertension and dyslipidemia

- Malignancy, infection and CV diseases are the three leading causes of mortality in men with ED