



10° CONGRESSO NAZIONALE

La crescita delle cronicità in un mondo
che invecchia: differenze di genere

23 - 24 settembre 2026
Evento in modalità virtuale

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Dalla Sindrome Metabolica al Diabete Tipo 2: implicazioni sesso e genere specifiche

Valeria Manicardi - Diabetologa

Responsabile Nazionale Campagna Annali AMD

Reggio Emilia

24-Settembre- 2026

AGENDA :

- **SINDROME METABOLICA**
 - **OBESITA'**
 - **DIABETE TIPO 2**
- **Condizioni cliniche sottese dalla RESISTENZA
INSULINICA**
- 

AGENDA :

- SINDROME METABOLICA
- OBESITA'
- DIABETE TIPO 2

→ Condizioni cliniche sottese dalla **RESISTENZA INSULINICA**



Review

Gender Differences in Insulin Resistance: New Knowledge and Perspectives

Tiziana Ciarambino ^{1,*}, Pietro Crispino ^{2,†}, Gloria Guarisco ³ and Mauro Giordano ⁴

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Abstract: Insulin resistance is the main mechanism in a whole series of pathological conditions, which are not only of metabolic interest but also of a systemic type. This phenomenon means that the body's cells become less sensitive to the hormone insulin, leading to higher levels of insulin in the blood. Insulin resistance is a phenomenon that can be found in both men and women and in particular, in the latter, it is found mainly after menopause. Premenopause, hormonal fluctuations during the menstrual cycle, and the presence of estrogen can affect insulin sensitivity. Androgens, such as testosterone, are typically higher in men and can contribute to insulin resistance. In both sexes, different human body types affect the distribution and location of body fat, also influencing the development of diabetes and cardiovascular disease. Insulin resistance is also associated with some neurological and neurodegenerative disorders, polycystic ovary syndrome, atherosclerosis, and some of the main neoplastic pathologies. A healthy lifestyle, including regular physical activity, a balanced diet, and self-maintenance, can help to prevent the onset of insulin resistance, regardless of gender, although the different habits between men and women greatly affect the implementation of preventative guidelines that help in fighting the manifestations of this metabolic disorder. This review may help to shed light on gender differences in metabolic diseases by placing a necessary focus on personalized medical management and by inspiring differentiated therapeutic approaches.



Citation: Ciarambino, T.; Crispino, P.; Guarisco, G.; Giordano, M. Gender Differences in Insulin Resistance: New Knowledge and Perspectives.

Keywords: gender; insulin resistance; hormones

DIAGNOSI

La diagnosi di sindrome metabolica è basata sulla presenza di **almeno tre dei seguenti cinque criteri**:

- **circonferenza vita, ≥ 94 cm negli uomini e ≥ 80 cm nelle donne di origine europea** (caucasica) **(IDF)**. Per altre popolazioni possono essere applicati valori soglia differenti
- **trigliceridi ≥ 150 mg/dl**, o terapia specifica per l'ipertrigliceridemia
- **colesterolo HDL <40 mg/dl negli uomini, <50 mg/dl nelle donne**, oppure terapia specifica per questa alterazione
- **pressione arteriosa $\geq 130/80$ mmHg**, oppure terapia antipertensiva
- **glicemia a digiuno ≥ 100 mg/dl** o precedente diagnosi di diabete di tipo 2 o terapia ipoglicemizzante

Elemento essenziale è la CIRC VITA

- 80 (88) cm x le F
- 94 (102) cm per i M

l'incidenza della S metabolica è in forte crescita: nella fascia d'età over 50, colpisce tra il 45% e il 60% della popolazione.



Insulino Resistenza e patologie associate

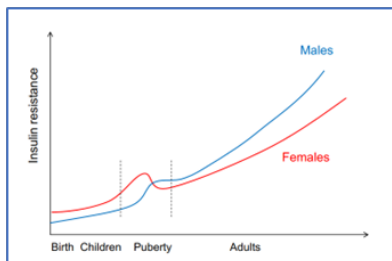
Table 3. Associated health conditions of insulin resistance.

Associated Health Conditions of Insulin Resistance
Metabolic syndrome
Type-2 diabetes mellitus
Non-alcoholic fatty liver disease
Syndrome of polycystic ovary disease
Atherosclerosis and cardiovascular disease
Neurodegenerative disease(Parkinson's disease and Alzheimer's disease)
Neoplastic diseases(breast, colorectal, pancreas, and liver cancer)

Prevale nei M, e aumenta con l'Età: dopo la menopausa, con la perdita della protezione ormonale anche le donne iniziano ad accumulare grasso viscerale, ed aumentano la Circ Vita e il Rischio CV.

Men are more insulin-resistant than women (?)

- IR is generally more prevalent in men compared to premenopausal women. However, after menopause, the incidence of IR in women increases and becomes more comparable to that of men.
- IR is a key underlying factor in the development of T2DM. Men with insulin resistance are more likely to develop T2DM at an earlier age compared to women. Additionally, men with insulin resistance have a higher risk of developing nonalcoholic fatty liver disease (NAFLD) and cardiovascular disease compared to women with insulin resistance.
- Lifestyle choices, such as diet and physical activity, can influence IR. Men and women may have different patterns of dietary preferences and physical activity levels, which can contribute to variations in insulin sensitivity.



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INSULINICA**



ORIGINAL ARTICLE

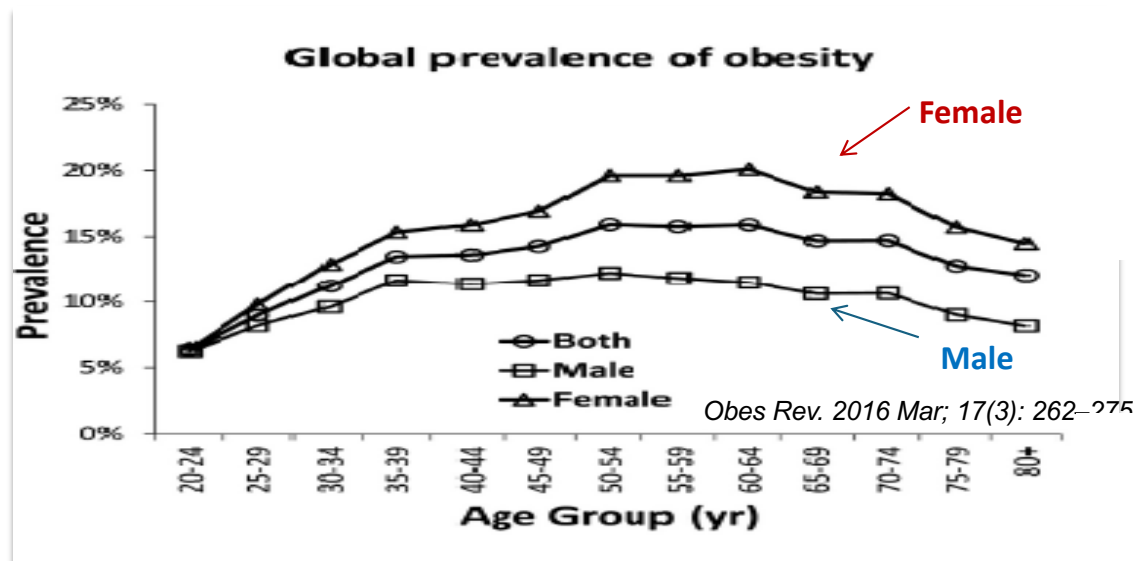
Global differences between women and men in the prevalence of obesity: is there an association with gender inequality?

F Garawi, K Devries, N Thorogood and R Uauy

OBESITA' e Genere → Malattia Cronica (oggi)

- **L'obesità è una malattia cronica** con gravi complicanze, la sua prevalenza è di genere L'obesità dipende dall'assunzione di cibo e dal dispendio energetico, e questi meccanismi sono entrambi di genere
- **L'obesità è geneticamente determinata:** cromosomi sessuali, interazione gene-genere sull'assunzione di cibo, dispendio energetico e risposta ai trattamenti anti-obesità
- **Gli ormoni sessuali e della menopausa** giocano un ruolo importante
- **L'obesità è anche una malattia sociale (ruoli/scolarità)** ma questo **non è riconosciuto** (ed è di genere)
- **Le conseguenze dell'obesità e la risposta alle terapie** sono di genere

Global Prevalence in adults>20 yrs by age and sex



Global trends in adults>20 yrs by age and sex

ITALIAN BAROMETR OBESITY REPORT 2024

Obesità: una malattia sempre più “giovane”, più 1,6 milioni di adulti in 20 anni in Italia



Review

Neuroimaging of Sex/Gender Differences in Obesity: A Review of Structure, Function, and Neurotransmission

Danielle S. Kroll ¹, Dana E. Feldman ¹, Catherine L. Biesecker ¹, Peter Manza ¹, Paule Valery Joseph ^{1,2}, Nora D. Volkow ^{1,3} and

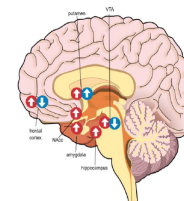
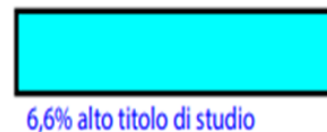


Figure 2. Resting state connectivity differences in obesity by sex/gender. Red circles indicate changes among females and blue circles indicate changes among males. Arrows indicate the direction of the correlation between centrality and obesity metrics (i.e., BMI, total body fat, serum leptin, Yale Food Addiction Scale (YFAS) score). VTA: ventral tegmental area.

ADULTI (18+) – OBESITÀ E GRADO DI ISTRUZIONE



Obesità e Livello di Istruzione

Dal 6,6% - laurea

Al 14,2 % - licenza

media



Circulation 2016

AHA Scientific Statement

Acute Myocardial Infarction in Women A Scientific Statement From the American Heart Association

Abstract—Cardiovascular disease is the leading cause of mortality in American women. Since 1984, the annual cardiovascular disease mortality rate has remained greater for women than men; however, over the last decade, there have been marked reductions in cardiovascular disease mortality in women. The dramatic decline in mortality rates for women is attributed partly to an increase in awareness, a greater focus on women and cardiovascular disease risk, and the increased application of evidence-based treatments for established coronary heart disease. This is the first scientific statement from the American Heart Association on acute myocardial infarction in women. Sex-specific differences exist in the presentation, pathophysiological mechanisms, and outcomes in patients with acute myocardial infarction. This statement provides a comprehensive review of the current evidence of the clinical presentation, pathophysiology, treatment, and outcomes of women with acute myocardial infarction. (*Circulation*. 2016;133:00-00. DOI: 10.1161/CIR.0000000000000351.)

Obesity and Type 2 DM

compared with lean women.¹⁶⁹ Obesity is a major risk factor for AMI in women and increases their risk almost 3-fold.¹⁷⁰ The risk of AMI associated with the metabolic syndrome is higher in younger women than any of the other groups, increasing their odds of AMI almost 5-fold.¹⁷¹ DM, related to obesity and the metabolic syndrome, is associated with a higher relative risk of coronary events in women compared with men, in part as a result of a higher rate of coexisting risk factors in women with DM¹⁷⁰ and better survival (relative to men) of women without DM.¹⁷² DM is an especially powerful risk factor in young women, increasing their risk of CHD, including ACS, by 4- to 5-fold.¹⁷³ For both men and women with DM, mortality after STEMI or UA/NSTEMI is significantly increased compared with their nondiabetic counterparts at 30 days and 1 year.¹⁷⁴

OBESITA':
Maggior fattore di rischio
di Infarto nella donna (x3)

S.Metabolica e DM : x 4 - 5
Nelle donne giovani

BMI=>30 : F 45,8%

OBESITA'

AGENDA :

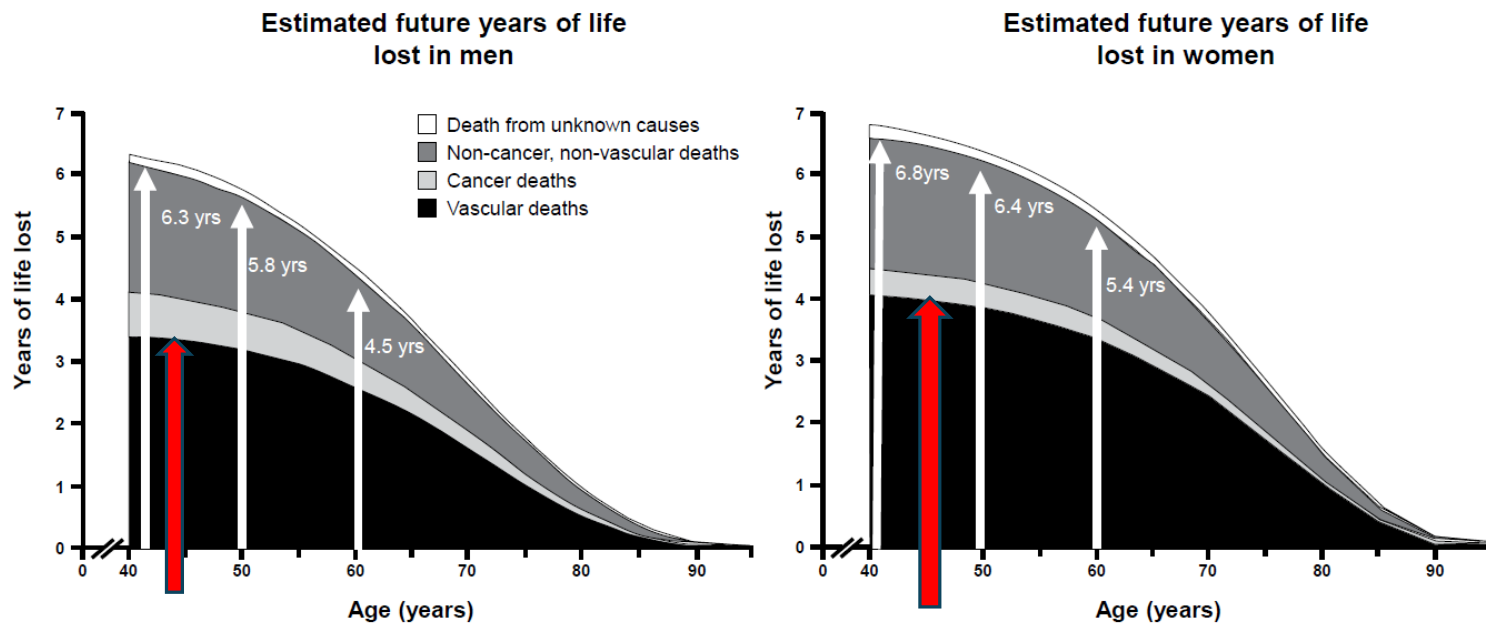
- SINDROME METABOLICA
- OBESITA'
- **DIABETE TIPO 2**

→ Condizioni cliniche sottese dalla **RESISTENZA
INSULINICA**





T2DM is associated with premature death from CV and non-CV causes



Arrows indicate the number of years of life lost incurred at specific ages by men or women with diabetes but without a history of vascular disease
 CV, cardiovascular
 Emerging Risk Factors Collaboration. *N Engl J Med* 2011;364:829–841

Anni di vita persi in DT2 in base al genere

Pari Opportunità di rischio CV:

**Le donne Diabetiche sono colpite da Infarto tanto come gli uomini:
- hanno perso la protezione ormonale dall'infarto in età fertile**

Editorial

Type 2 Diabetes and Cardiovascular Risk in Women

Giuseppina T. Russo,¹ Giovannella Baggio,²
Maria Chiara Rossi,³ and Alexandra Kautzky-Willer⁴

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Cardiovascular diseases (CVD) are the leading cause of death, also in diabetic women. Since 1998, when Haffner et al. [1] stated that subjects with type 2 diabetes mellitus (T2DM) had a CVD risk "equivalent" to previous myocardial infarction, a large number of studies have shown that this relative risk for CVD due to diabetes is greater in women than in men [2].

CVD in diabetic subjects is not entirely related to chronic hyperglycaemia and a number of other factors such as dyslipidaemia, hypertension, hormonal, genetic, and environmental factors, as well as low-grade systemic inflammation and endothelial damage, lifestyle behaviours, adherence to therapies, and/or psychosocial factors may contribute to the worst outcomes observed in diabetic women. Notably, it is increasingly recognized that many of these factors show gender differences in their prevalence and/or association with CVD events, and this aspect should be specifically targeted when aiming at primary or secondary CVD prevention in diabetic subjects.

In this special issue, we looked at CVD in women

than in males for mortality for all causes, for CVD, and for myocardial infarction and renal causes. In the other study, G. Luo et al. showed in a retrospective analysis that fasting plasma glucose was an independent predictor of in-hospital mortality for nondiabetic female patients.

Gender-specific prevalence and management of major and emerging CVD risk factors in different populations were also the main topic of several papers of this special issue.

The paper by S. Chen et al., with a very interesting experimental protocol, clarified the relationships of albuminuria, a well-recognized CVD risk factor, with circulating levels of angiotensin-1 (Ang-1), Ang-2, and vascular endothelial growth factor (VEGF) in serum and urine.

Potential gender differences in the distribution and control of major CVD risk factors were investigated in another three very large high-risk populations. Thus, in the eControl Study, a study on 286,791 patients with T2DM in Catalonia, Spain, J. Franch-Nadal et al. found that cardiometabolic control was worse in subjects with prior CVD; but control



Registri N-Hanes (2000):

- Riduzione della CHD nella pop generale
- Non nel DM
- Aumento nelle Donne con DM



Intern J Endocrinology ,2015

Excess risk of fatal coronary heart disease associated with diabetes in men and women: meta-analysis of 37 prospective cohort studies

Rachel Huxley, Federica Barzi, Mark Woodward

BMJ, 21 December 2006

Abstract

Objective To estimate the relative risk for fatal coronary heart disease associated with diabetes in men and women.

Design Meta-analysis of prospective cohort studies.

Data sources Studies published between 1966 and March 2005, identified through Embase and Medline, using a combined text word and MESH heading search strategy, in addition to studies from the Asia Pacific Cohort Studies Collaboration.

Review methods Studies were eligible if they had reported estimates of the relative risk for fatal coronary heart disease comparing men and women with and without diabetes. Studies were excluded if the estimates were not adjusted at least for age.

Results 37 studies of type 2 diabetes and fatal coronary heart disease among a total of 447 064 patients were identified. The rate of fatal coronary heart disease was higher in patients with diabetes than in those without (5.4 v 1.6%). The overall summary relative risk for fatal coronary heart disease in patients with diabetes compared with no diabetes was significant (3.50, 95% CI 2.80 to 4.30).

Donne con DM2 hanno un rischio aumentato di eventi CV e di mortalità del 50% rispetto ai maschi

After adjustment for age, the relative risk was 1.46 (1.14 to 1.88), reduced but still highly significant. The pooled ratio of the relative risks (women: men) from the 29 studies with multiple adjusted estimates was 1.46 (1.14 to 1.88).

Conclusions The relative risk for fatal coronary heart disease associated with diabetes is 50% higher in women than it is in men. This greater excess coronary risk may be explained by more adverse cardiovascular risk profiles among women with diabetes, combined with possible disparities in treatment that favour men.

RR F vs M nei 29 studi corretti per fattori confondenti = **1,49**

Le Donne Diabetiche hanno il 50% in più di rischio di Eventi CV fatali rispetto ai Maschi.

Cause :

- **Peggior profilo di rischio CV**
- **Sottotrattamento con Statine, ASA, Antiipertensivi , B Bloccanti**

Recent studies found that men with diabetes or established cardiovascular disease are more likely to receive aspirin, statins, or antihypertensive drugs than are women. For example, one study

for cardiovascular disease reported from the United Kingdom prospective diabetes study,³⁹ where women with diabetes were significantly less likely to use aspirin compared with men. In two recent studies from the United States, women with diabetes were also less likely to be treated with aspirin and lipid lowering agents or to achieve recommended levels of blood pressure or low density lipoprotein cholesterol than were men.^{40 41} Therefore more

Le donne con T2DM hanno anche un aumentato rischio di Stroke



Diabetologia (2006) 49:2859–2865
DOI 10.1007/s00125-006-0493-z

ARTICLE

Risk of stroke in people with type 2 diabetes in the UK: a study using the General Practice Research Database

H. E. Mulnier • H. E. Seaman • V. S. Raleigh •
S. S. Soedamah-Muthu • H. M. Colhoun •
R. A. Lawrenson • C. S. De Vries

**Age-adjusted HR for stroke in DM2
subjects vs non diabetic subjects was:**

- **2.08 (95%CI:1.94-2.24)** in men
- **2.32 (95%CI: 2.16-2.49)** in women.

**The increase in risk attributable to
diabetes was highest**

- in young women (HR **8.18**; 95%CI 4.31-15.51)
and decreased with age.

Table 4 Hazard ratios (95% CI) for stroke in diabetes compared with no diabetes stratified by sex and attained age-group

	All	Men	Women
Diabetes/no diabetes (n)	41,799/ 202,733	22,178/ 107,285	19,621/ 95,448
Age (years)			
35–54	5.64 (3.91–8.13)	4.66 (2.96–7.33)	8.18 (4.31–15.51)
55–64	3.81 (3.23–4.49)	3.31 (2.69–4.07)	4.89 (3.71–6.45)
65–74	2.54 (2.31–2.79)	2.35 (2.07–2.65)	2.83 (2.45–3.28)
75–84	1.90 (1.75–2.06)	1.69 (1.49–1.90)	2.10 (1.89–2.34)
≥85	1.69 (1.49–1.92)	1.60 (1.28–1.99)	1.74 (1.49–2.03)
All ages	2.19 (2.09–2.32)	2.08 (1.94–2.24)	2.32 (2.16–2.49)

MACE

Research Article

Sex Differences in the Effect of Type 2 Diabetes on Major Cardiovascular Diseases: Results from a Population-Based Study in Italy

International Journal of Endocrinology
Volume 2017, Article ID 6039356, 9 pages

Paola Ballotari,^{1,2} Francesco Venturelli,³ Marina Greci,⁴ Paolo Giorgi Rossi,^{1,2} and Valeria Manicardi⁵

	UOMINI			DONNE		
EVENTO:	SENZA DM2	CON DM2	IRR (95%CI)	SENZA DM2	CON DM2	IRR (95%CI)
ICTUS	37.28	74.70	1.86 (1.68-2.06)	30.10	61.73	1.81 (1.60-2.04)
INFARTO	39.04	78.02	1.78 (1.60-1.98)	16.13	47.58	2.58 (2.22-2.99)
SCOMPENSO	21.47	63.71	2.78 (2.48-3.12)	17.10	48.83	2.59 (2.27-2.97)

I Diabetici hanno un rischio aumentato (quasi doppio per ICTUS E INFARTO, quasi triplo per SCOMPENSO), ma le DONNE con DT2 hanno un RISCHIO di IMA >> Maschi



La Medicina di Genere in Diabetologia
nasce in AMD nel 2010 :
*il patrimonio degli ANNALI AMD
in ottica di genere*



Esistono differenze genere - specifiche

- nella **Qualità della Cura erogata ?**
- nel **profilo di rischio CV ?**
- nella **appropriatezza ed intensità di cura ?**

Strumento indispensabile : **Cartella Informatizzata SDC**

15 edizioni dal 2006 al 2025
dati dal real world di 343
Servizi Diab su
570.000 DT2 e 44000 DT1



Differenze di Genere nel Diabete : dal 2009 al 2023



2009



2016



2019

Anno 2023

DM2

573.164
(237.390 D –
42.7%)



Anno 2023

DM1

42.611
(19.388 D –
45.5%)

2023



Sex Disparities in the Quality of Diabetes Care: Biological and Cultural Factors May Play a Different Role for Different Outcomes

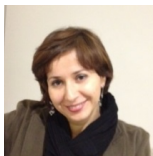
A cross-sectional observational study from the AMD Annals initiative

MARIA CHIARA ROSSI, MSCPHARMCHEM¹
MARIA ROSARIA CRISTOFARO, MD²
SANDRO GENTILE, MD³
GIUSEPPE LUCISANO, MSCSTAT¹
VALERIA MANICARDI, MD⁴
MARIA FRANCA MULAS, MD⁵
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ANTONIO NICOLUCCI, MD¹
FABIO PELLEGRINI, MSCSTAT¹
CONCETTA SURACI, MD⁷
CARLO GIORDA, MD⁸
ON BEHALF OF THE AMD ANNALS STUDY
GROUP*

Gender medicine integrates aspects of biology, sociology, ethnicity, and culture responsible for different responses to care in women and men (1). Gender medicine applied to the field of diabetes care is particularly relevant because women with diabetes, regardless

OBJECTIVE—To investigate the quality of type 2 diabetes care according to sex.



- ✓236 centri
- ✓188,125 donne
- ✓227,169 uomini



Differenze di genere nel DT2 (2009)



• **COMPENSO METABOLICO (HbA1c)**



• **PROFILO LIPIDICO (LDL-C)**



• **OBESITA' (BMI)**

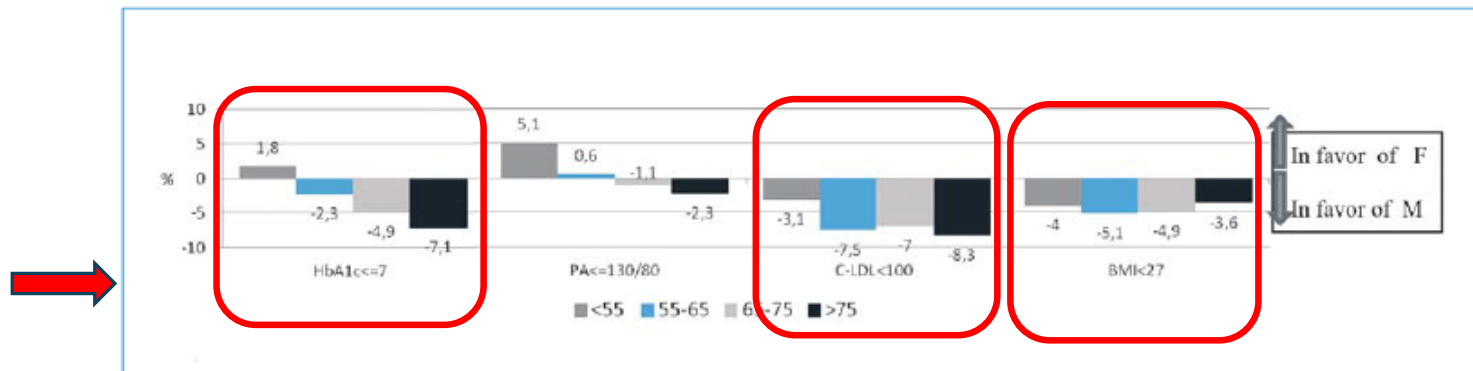
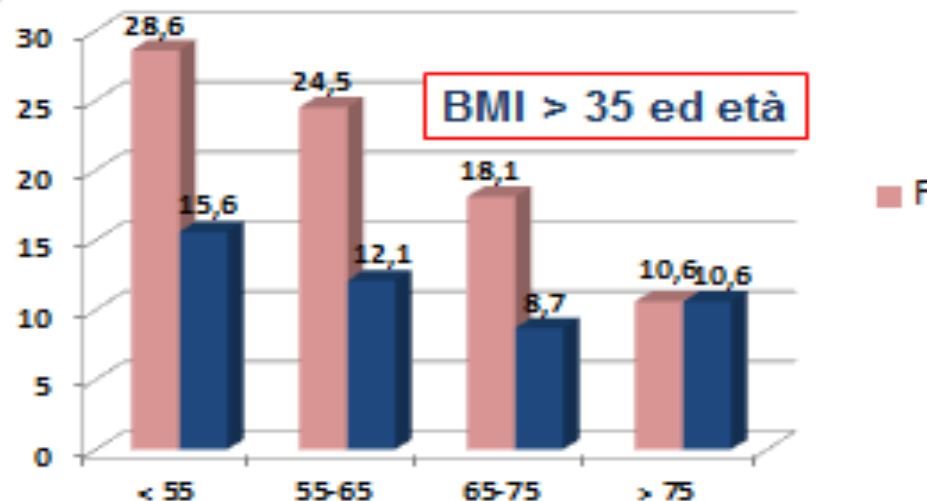


Figure 1. Favorable outcomes in diabetic men and women and age (AMD Annals). The intermediate outcomes (target of HbA1c, PA, C-LDL, BMI) are systematically in favor of men, independently of age.



e BMI nel Diabete

Le donne sono più obese, e l'Obesità medio severa è soprattutto appannaggio delle donne più giovani, ma ancora nella fascia di età 65-75 la differenza è consistente.



Trend delle differenze di genere nel DT2 (2009-2019-2023)

Indicatori di esito intermedio **favorevole** nel DM2



Indicatori favorevoli	2009 F/M %	Diff. %	2019 F/M %	Diff. %	2023 F/M %	Diff. %
HbA1c <7%	41.7 / 45,5	- 3.8	50.3 / 53.3	- 3.0	55.5 / 56.8	- 1.3
Col. LDL<100	38.4 / 44.6	- 6.2	60.3 / 68.5	- 8.2	68.8 / 76.3	- 6.5
PA <140/90	41.9 / 43.8	- 1.9	54.5 / 53.4	+ 1.2	55.5 / 54.5	+ 1.0

Col LDL <70 mg/dl (%)

	M	F
2023	38,6	28,4
2019	31,3	22,4

Miglioramento continuo della Qualità di cura nel tempo,
ma le differenze di genere si mantengono, con esiti peggiori
sui FdR CV, soprattutto sui Lipidi

Il genere influenza le scelte Terapeutiche ?



CLINICAL RESEARCH

European Heart Journal (2011) 32, 1337–1344
doi:10.1093/eurheartj/ehr027

Factors influencing underutilization of evidence-based therapies in women[†]

Raffaele Bugiardini^{1*}, Andrew T. Yan², Raymond T. Yan², David Fitchett², Anatoly Langer², Olivia Manfrini¹, and Shaun G. Goodman², on behalf of the Canadian Acute Coronary Syndrome Registry I and II Investigators*

[†]Dipartimento di Medicina Interna, Cardioangiologia, Epatologia (Padiglione 11), University of Bologna, Via Massarenti 9, 40138 Bologna, Italy; and ²Terrence Donnelly Heart Centre, Division of Cardiology, St. Michael's Hospital, University of Toronto and the Canadian Heart Research Centre, Toronto, Ontario, Canada

Received 18 October 2010; revised 8 January 2011; accepted 25 January 2011; online publish-ahead-of-print 7 March 2011

See page 1313 for the editorial comment on this article (doi:10.1093/eurheartj/ehr083)

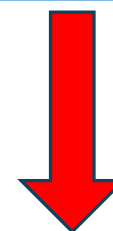
Aims Previous studies have reported differences in the use of cardiovascular medications for acute coronary syndromes (ACSs) according to the sex of the patient. We analysed which clinical factors are associated with underutilization of evidence-based therapies in women.

Methods and results From the Canadian Registry of ACS I and II, 6558 patients (4471 men and 2087 women) with a final diagnosis of ACS were selected for the current analysis. Covariates were chosen using the approach described by Blackstone. The final selected model included 23 patient clinical variables. Women were less likely than men to receive beta-blockers (75.76 vs. 79.24%; $P < 0.01$), lipid-modifying agents (56.37 vs. 65.44%; $P < 0.0001$), and angiotensin-converting enzyme (ACE)-inhibitors (55.52 vs. 59.99%; $P < 0.01$). Female sex and clinical decision not to investigate with cardiac catheterization were the strongest independent predictors for not receiving lipid-modifying agents and ACE-inhibitors. Age, Killip class 2, and Killip class 3/4 were significant independent predictors of underutilization of beta-blocker use. Women were older (69 ± 12 vs. 64 ± 12 ; $P < 0.01$) with a higher prevalence of Killip class ≥ 2 (19.95 vs. 15.54%; $P < 0.068$), and they were less likely to be referred for cardiac catheterization (41.9 vs. 49.6%; $P < 0.001$).

Conclusions The current findings demonstrate that underutilization of evidence-based therapies in women with ACS compared with men is associated with multiple factors related to the patient (age), the consequences of the disease (congestive heart failure), and the physician's assessment of patient risk (decision to catheterize). Female gender remains associated with underutilization of lipid-modifying agents and ACE-inhibitors despite adjustment for these confounders.

Keywords Women • Evidence-based therapies

Il genere femminile
Resta un predittore
indipendente di sotto
Utilizzo di Statine
e ACE-I



Sottotrattamento

Sottotrattamento
delle donne con
Diabete vs uomini

WHO : Women are not little men

AHA Scientific Statement

Sex Differences in the Cardiovascular Consequences of Diabetes Mellitus
A Scientific Statement From the American Heart Association

Judith G. Regensteiner, PhD, FAHA, Co-Chair; Sherita Golden, MD, MHS, FAHA, Co-Chair;
Amy G. Huebschmann, MD, MSc; Elizabeth Barrett-Connor, MD, FAHA;
Alice Y. Chang, MD, MSc; Deborah Chyun, PhD, RN, FAHA; Caroline S. Fox,* MD, FAHA;
Catherine Kim, MD, MPH; Nehal Mehta, MD, MSCE; Jane F. Reckelhoff, PhD, FAHA;
Jane E.B. Reusch, MD; Kathryn M. Rexrode, MD, MPH; Anne E. Sumner, MD, FAHA;
Francine K. Welty, MD, FAHA; Nanette K. Wenger, MD, FAHA; Blair Anton, MLIS, MS, AHIP;
on behalf of the American Heart Association Diabetes Committee of the Council on Lifestyle and
Cardiometabolic Health, Council on Epidemiology and Prevention, Council on Functional Genomics
and Translational Biology, and Council on Hypertension

The prevalence of diabetes mellitus (DM) is increasing at a rapid rate. In the United States in 2012, 29.1 million Americans, or 9.3% of the population, had DM.¹ Currently, ≈1 in 13 people living in the United States has DM, and 90% to 95% of these individuals have type 2 DM (T2DM).² Overall, the prevalence of T2DM is similar in women and men. In the United States, ≈12.6 million women (10.8%) and 13 million men (11.8%) ≥20 years of age are currently estimated to have T2DM.²

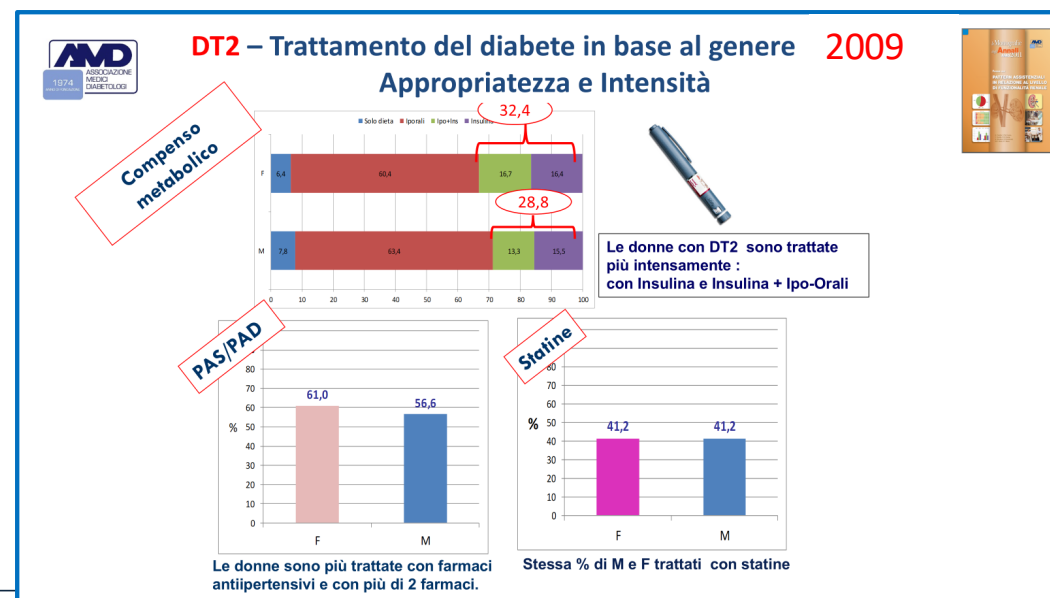
higher prevalence of DM than non-Hispanic white (NHW) women.

This scientific statement was designed to provide the current state of knowledge about sex differences in the cardiovascular consequences of DM, and it will identify areas that would benefit from further research because much is still unknown about sex differences in DM and CVD. Areas that are discussed include hormonal differences between the sexes and their possible effects on the interaction between DM and CVD, sex differences in the prevalence of DM, and sex differences in the cardiovascular consequences of DM.

Table 2. Sex Differences in CVD Treatments and Interventions in DM

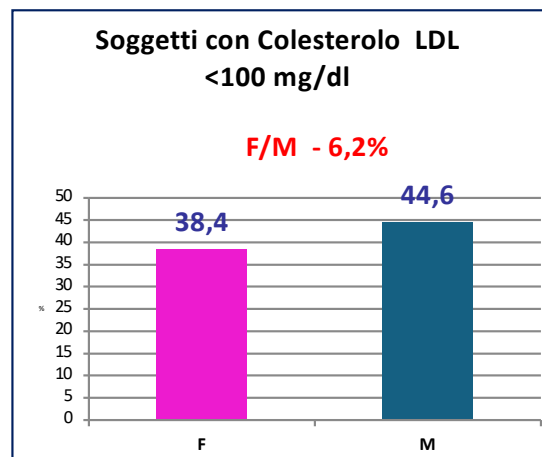
CVD Treatment/Intervention	Sex Differences
Prescription of pharmacotherapy	Compared with men, women have lower frequency of lipid-lowering (statin) therapy, lower aspirin use, and lower ACE inhibitor and β-blocker use
	Lower medication adherence in women compared with men in some but not all studies
	consider because women of ethnic minority backgrounds have a higher prevalence of DM than non-Hispanic white (NHW) women.

Statement dell'AHA su Mortalità e rischio cardiovascolare nelle donne con Diabete T2 : sottotrattamento delle donne con Diabete rispetto ai maschi



> sottotrattamento
< aderenza

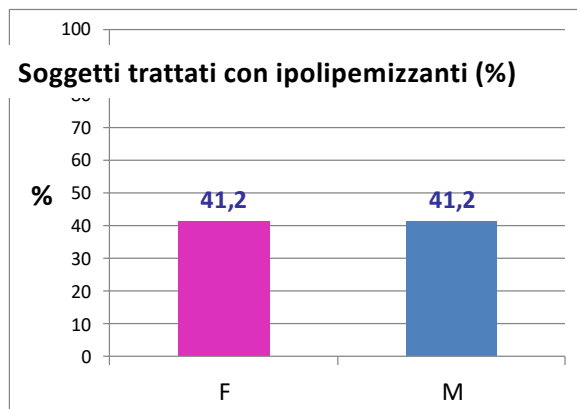
Trend dell'LDL-Colesterolo nel DT2 in base al genere



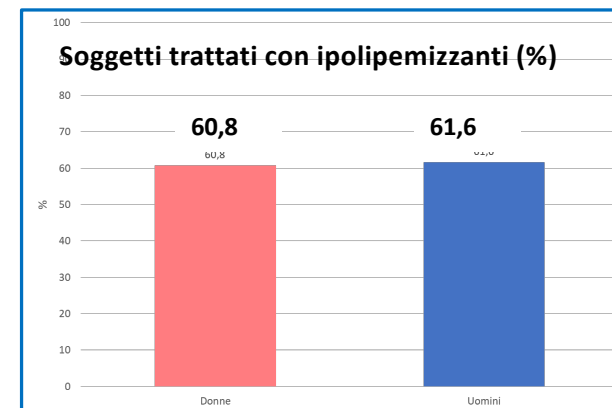
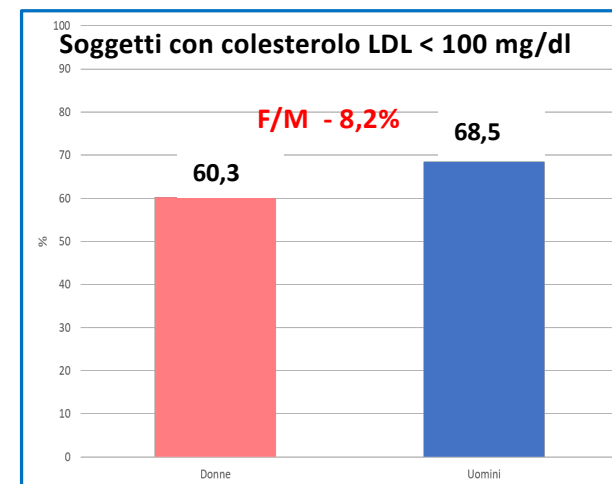
2009

**I dati degli Annali
2009 → 2019**

**I Target sono migliorati sia nei M
che nelle F ,
ma le differenze a sfavore delle
donne sono rimaste,
a parità di trattamento con
ipolipemizzanti**



2019



Resistenza alle statine o mancata aderenza?



Profilo LIPIDICO

Il mancato raggiungimento dei target di LDL-C è sempre a sfavore delle Donne con DT2 :

- Sia trattate che non trattate con Statine
- le differenze aumentano con età e durata del DM.



Le Donne con DT2 più anziane sono a maggior rischio di CHD.

Donne DM2 senza CHD hanno lo stesso profilo di sottopopolazioni HDL degli uomini con pregresso IMA: HDL meno ateroprotettiva (Atherosclerosis, 2010:204)

Hindawi Publishing Corporation
International Journal of Endocrinology
Volume 2015, Article ID 957105, 8 pages
<http://dx.doi.org/10.1155/2015/957105>



Research Article

Age- and Gender-Related Differences in LDL-Cholesterol Management in Outpatients with Type 2 Diabetes Mellitus

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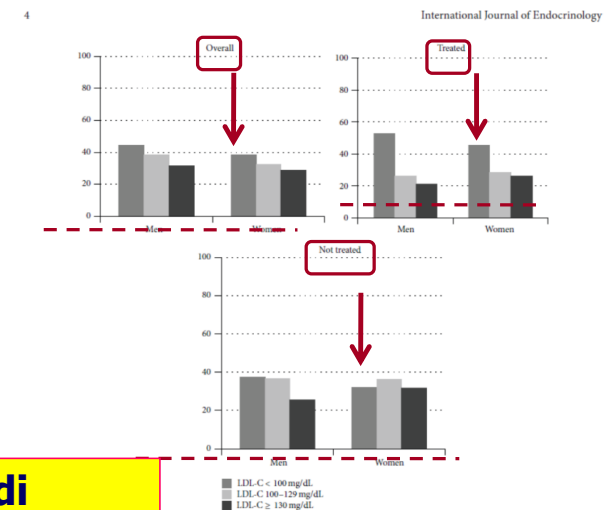
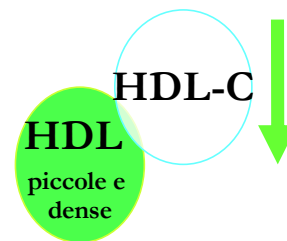
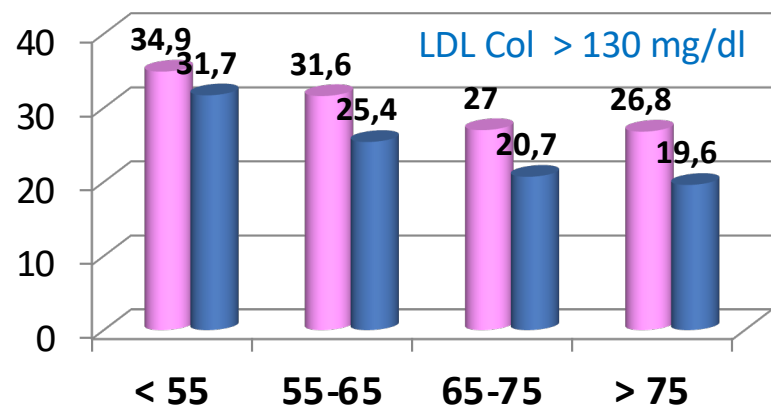
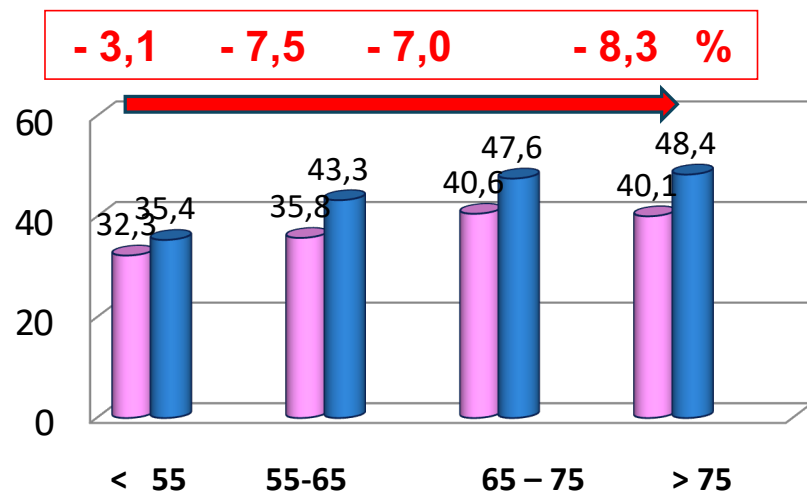


Figure 1: LDL-C classes according to gender and lipid-lowering treatment.

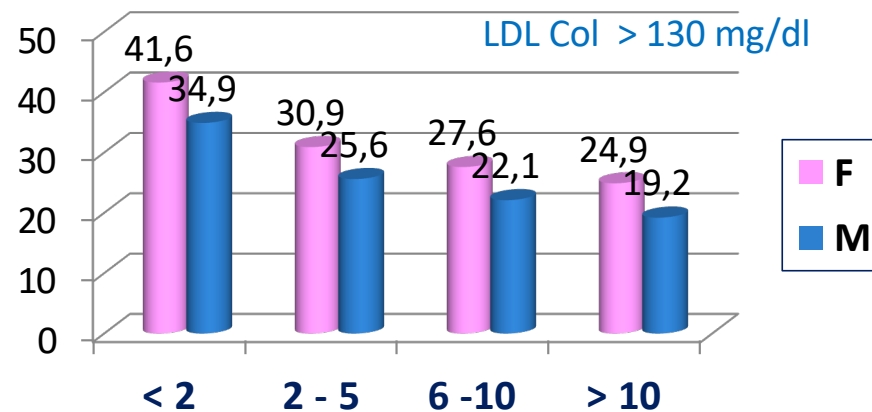
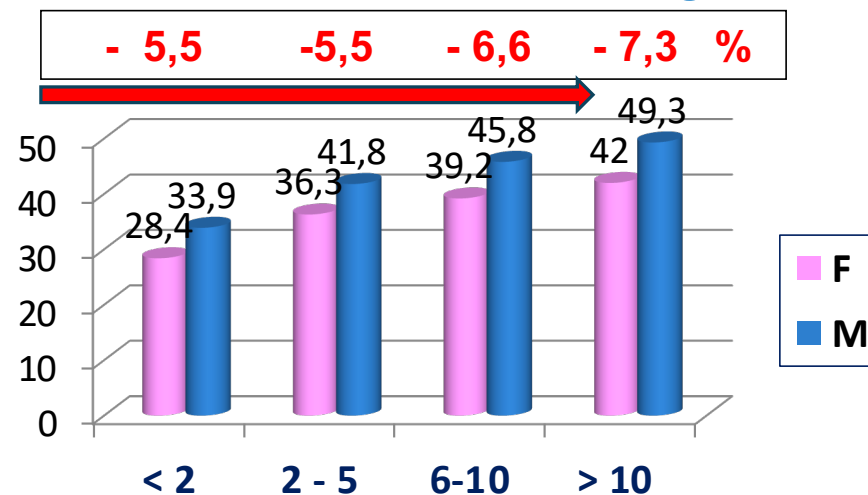


Il gap aumenta con l'età

Età e LDL Col < 100 mg/dl



Durata e LDL Col < 100 mg/dl



Studi Italiani di intervento confermano i dati degli ANNALI di Genere

Studio RIACE

Original Article

Journal of INTERNAL MEDICINE

doi: 10.1111/jim.12073

Gender differences in cardiovascular disease risk factors, treatments and complications in patients with type 2 diabetes: the RIACE Italian multicentre study

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Conclusions. In women with type 2 diabetes from the RIACE cohort, a more adverse CVD risk profile and a higher likelihood of failing treatment targets, compared with men, were not associated with treatment differences. This suggests that factors other than gender disparities in treatment intensity are responsible.

has been proposed that this finding is due to gender disparities in treatment intensity. We investigated this hypothesis in a large contemporary cohort of subjects with type 2 diabetes.

Design. Observational, cross-sectional study.

Subjects and setting. Consecutive patients with type 2 diabetes from the Renal Insufficiency And Cardiovascular Events (RIACE) Italian multicentre study (n = 15 773), attending 19 hospital-based diabetes clinics in 2007–2008.

*A complete list of the RIACE investigators can be found in the Appendix Clinical Trial Registration: <http://clinicaltrials.gov/ct2/show/NCT00715481>; NCT00715481.

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Conclusions. In women with type 2 diabetes from the RIACE cohort, a more adverse CVD risk profile and a higher likelihood of failing treatment targets, compared with men, were not associated with treatment differences. This suggests that factors other than gender disparities in treatment intensity are responsible.

Keywords: cardiovascular disease risk factors, complications, gender, treatment disparities, type 2 diabetes.

Nutrition, Metabolism & Cardiovascular Diseases (2012) xx, 1–7



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Studio MIND.IT

Women show worse control of type 2 diabetes and cardiovascular disease risk factors than men: Results from the MIND.IT Study Group of the Italian Society of Diabetology

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Donne con DT2:

- Peggior profilo di rischio CV
- Più frequente fallimento nel raggiungimento dei target per i FdR CV
- Nessuna differenza di trattamento

res the degree of control of hyperglycaemia in men and women with type 2 diabetes and the use of medications. was conducted at 10 hospital-based outpatient clinics with no previous CV events were studied. and more obese than men: average BMI was 30.0 (SD 3.0), and prevalence of abdominal obesity (waist circumference ≥ 102 cm for men, ≥ 88 cm for women) was higher in women (44.5% vs 34.1%, P < 0.001). but had higher HbA1c, LDL cholesterol, non-HDL cholesterol, and fibrinogen than men. Accordingly optimal glycaemic control (HbA1c < 7.0%, HDL cholesterol > 40 mg/dL for men, > 50 mg/dL for women) was less frequently achieved in women (14.6% vs 19.2%; 34.1% vs 44.5%; 68.8% vs 78.8% after stratification for waist circumference or men), BMI (< or ≥ 25 kg/m²) or age were not different between men and women. more likely than men to take insulin, alone or in combination with oral hypoglycaemic agents, to be under anti-hypertensive treatment, and to be under anti-lipidemic treatment, both in men and women.



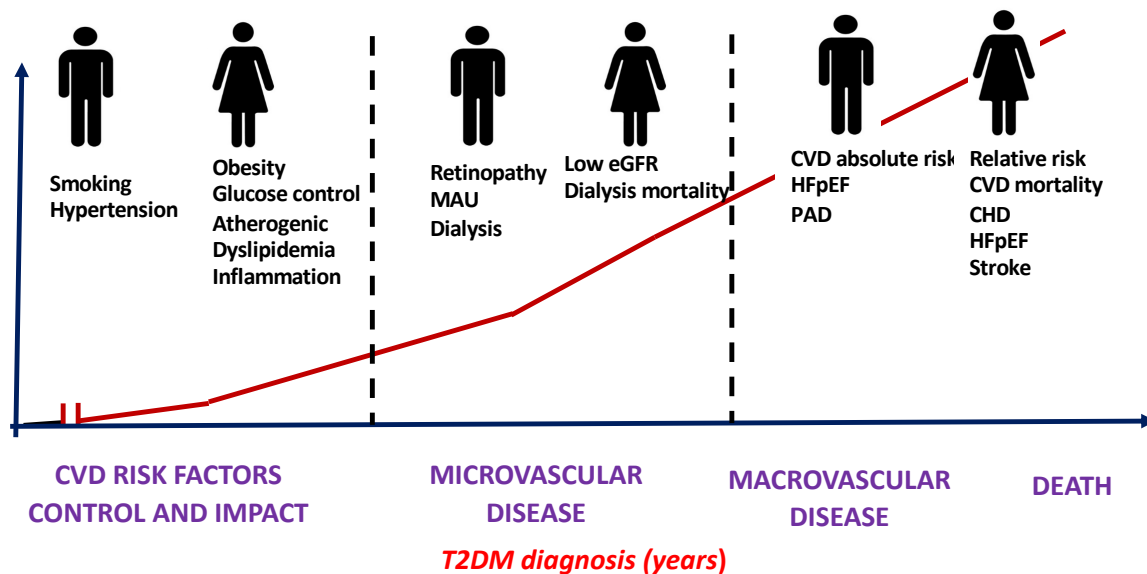
REVIEW

Sex- and gender-differences in chronic long-term complications of type 1 and type 2 diabetes mellitus in Italy

G.T. Russo^{a,**}, V. Manicardi^b, M.C. Rossi^c, E. Orsi^d, A. Solini^{e,*}



Sex/Gender differences in diabetes complications and risk factors



Ruolo di sesso/genere

RASSEGNA

Differenze di genere nel diabete mellito di tipo 1 e di tipo 2: i dati italiani

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DOI: <https://doi.org/10.30682/11dia2103a>

Diversi FdR nell'uomo e nella donna con Diabete nella storia di malattia condizionano l'insorgenza di complicanze e la mortalità

When Sex Shapes Diabetes Care: Evidence from the AMD Annals Registry

Andrea Da Porto, MD,¹ Sara Piccini, MD,¹ Valeria Manicardi, MD,² Elisa Manicardi, MD,³
Alessandra Luberto, MD,⁴ Concetta Suraci, MD,² Salvatore De Cosmo, MD,⁵ Riccardo Candido, PhD,⁶
and Giuseppina Russo, PhD⁷; on behalf of AMD ANNALS Study Group

Abstract

Background: Sex and gender differences substantially influence the epidemiology, clinical presentation, and outcomes of type 2 diabetes (T2D). Although guideline-recommended cardiometabolic therapies have expanded in recent years, evidence suggests that women with T2D continue to experience disparities in risk factor control, access to cardioprotective treatments, and clinical outcomes. This study aimed to evaluate sex-based differences in quality of care, treatment patterns, and clinical inertia using real-world data from the Associazione Medici Diabetologi (AMD) Annals Initiative.

Methods: We conducted a cross-sectional analysis of 2023 data from 296 diabetes clinics participating in the AMD Annals registry. Adults with active T2D (≥1 antidiabetic prescription and ≥1 clinical assessment in 2023) were included. Process indicators, intermediate outcomes, pharmacologic treatments, and final outcomes were assessed according to AMD Indicators (Revision 9). All analyses were stratified by sex.

Results: The study included 571,962 individuals with T2D (41.5% women). Glycemic control and overall quality-of-care scores were similar between sexes. However, women exhibited higher BMI, greater prevalence of severe obesity, poorer lipid control, and higher rates of reduced eGFR. Despite comparable or higher cardio-metabolic risk, women were less frequently monitored for albuminuria and retinopathy and were significantly less likely to receive SGLT2 inhibitors and GLP-1 receptor agonists, particularly in the presence of chronic kidney disease, cardiovascular disease, or heart failure. Indicators of clinical inertia consistently disadvantaged women, especially regarding cardioprotective therapies.

Conclusions: Despite comparable overall quality-of-care scores, clinically meaningful sex disparities persist in T2D management in Italy. Women experience a higher burden of metabolic risk and reduced access to evidence-based cardioprotective treatments. These findings highlight the urgent need for gender-sensitive diabetes care strategies to reduce therapeutic inequities and improve cardiovascular and renal outcomes in women with T2D.

In ITALIA fino al 2018 non abbiamo evidenziato sottotrattamenti delle Donne vs Uomini con DT»,ma dal 2019 SI

DT2 – Trattamento del diabete in base al genere: Alert sui Nuovi Farmaci

Uso dei farmaci innovativi che danno Protezione diretta cardio-renale : DIFFERENZE di GENERE !

2019	F	M
GLP1-RA	10,7	11,1
SGLT2i	9,8	13,8
2023	F	M
GLP1-RA	30,4	32,7
SGLT2i	29,2	40,4



Dal Treat to target al Treat to benefit

Conclusioni



S Metabolica, Obesità a Diabete T2 riconoscono differenze genere specifiche , *spesso a sfavore delle donne*, in parte su base genetica e ormonale , ma anche legate a ruoli sociali che possono essere modificati

Cosa fare subito ?

- **Trattare** subito **tutti** i FdR CV e Renali
- **Intensificare** le terapie per raggiungere i target
- **Verificare l'aderenza** e la persistenza alle terapie, **motivando i pazienti**
- Motivare le pazienti ad adottare stili di vita più favorevoli

Aumentare la sensibilità e la conoscenza dei medici italiani sulle differenze per migliorare la qualità della cura in base al genere