



Pregnancy in women with cardiomyopathy

The ItOSS Prospective Population-Based Study

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Cardiomyopathy in pregnancy

Why it matters

- Cardiomyopathy in pregnancy is a rare condition, but it is clinically very relevant.
- Cardiovascular disease is the leading cause of indirect maternal death in high-income countries.
- Among cardiovascular conditions, cardiomyopathy is the most frequent and is associated with the highest occurrence of maternal and perinatal complications.

Study aim

To estimate the prevalence in Italy and describe:

- clinical profile and risk factors
- management
- maternal and perinatal outcomes

to provide useful guidance for clinical practice





Study characteristics and case definition

Study design

Prospective population-based **CASE CONTROL** study

Case definition

Women diagnosed with dilated, hypertrophic, arrhythmogenic, or peripartum cardiomyopathy before, during, or within 42 days of the end of pregnancy.

Data
collection
25 months

March 2024 – March 2026

Observed cases

85

Prevalence 0.13

per 1,000 deliveries

95% CI: 0.11–0.16

52 Prevalent cases

diagnosed before the current pregnancy

33 Incident cases

*diagnosed during the current pregnancy or
within 42 days from pregnancy outcome*



Diagnosis: prevalent vs incident cardiomyopathy

Prevalent cases

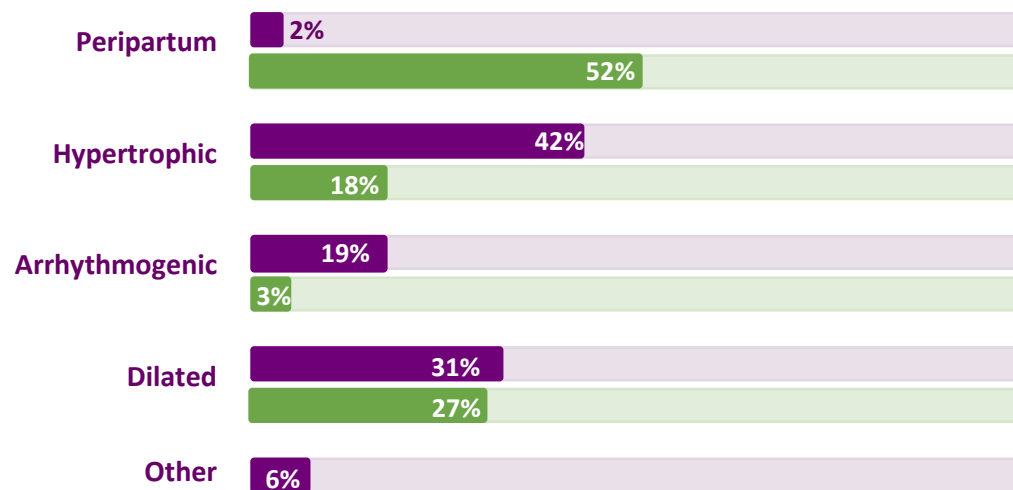
- Median time since diagnosis: 6.5 years (IQR 2.5–13)
- 3/52 diagnosed during a previous pregnancy or postpartum period

Incident cases

- 11 diagnosed during pregnancy
- 5 at birth
- 16 within 42 days postpartum

Type of cardiomyopathy

● Prevalent n=52 ● Incident n=33



Demographic and obstetric women's profile

	Prevalent (N=52)	Incident (N=33)	Controls (N=340)
Age	34 y	36/37 y	33 y
BMI ≥ 30	23%	19%	8%
BMI ≥ 35	10%	-	2%
Multiparous	54%	42%	49%
ART	8%	15%	5%
Pre-existing heart disease	83%	15%	1%

Abbreviations. BMI: Body Mass Index; ART, assisted reproductive technology



Preconception assessment in women with prevalent cardiomyopathy

Cardiology assessment

94%

Echocardiogram

LVEF <45% in 12%

83%

Pharmacological treatment

At least one

64%

Genetic testing

52%

Preconception counselling

43%

Exercise stress test

37%

Baseline BNP

15%

NYHA class III-IV

4%

38% unknown

North 24%

Centre 30%

South 77%

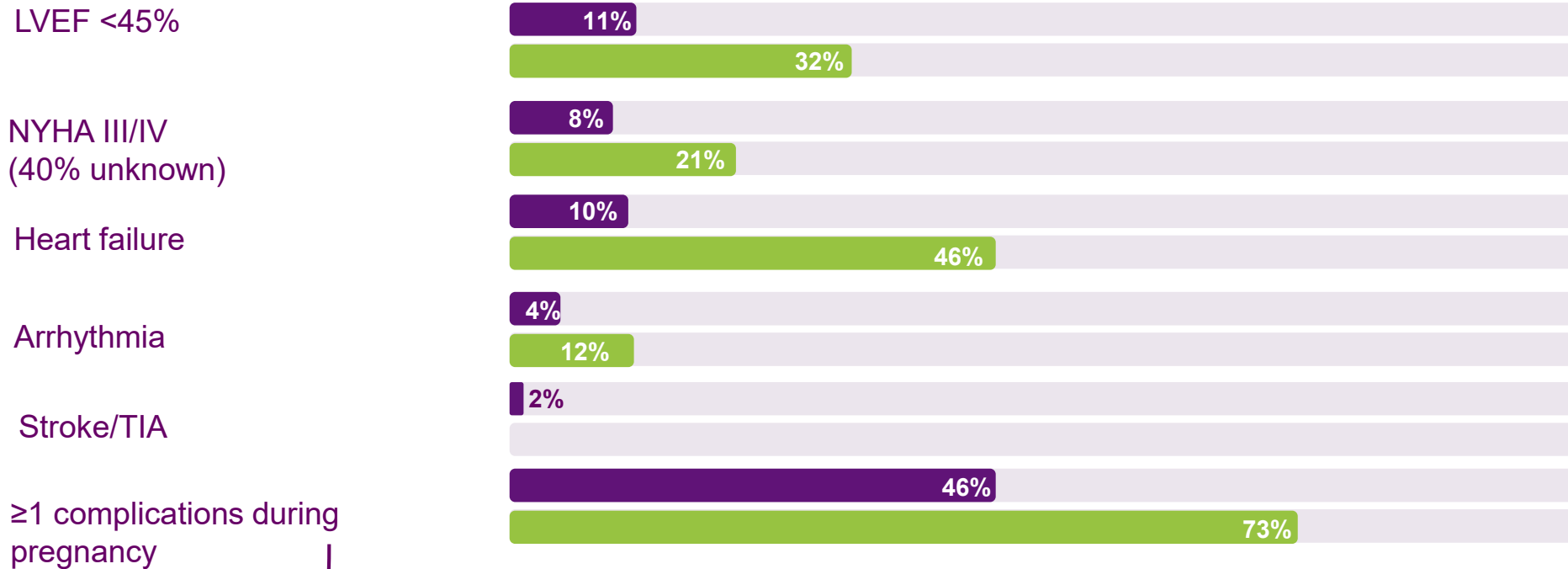
*New York Heart Association Functional Classification





Clinical severity during the current pregnancy

● Prevalent n=52 ● Incident n=33



≥1 complications during pregnancy

Hypertensive disorders of pregnancy (20%) and **gestational diabetes** (17%) were the most common complications





Maternity care services

ANTENATAL CARE

● Prevalent n=52 ● Incident n=33

High-risk pregnancy clinic

58%

24%

Specialist centre for cardiac disease in pregnancy

25%

3%

Private practice

23%

33%

Hospital outpatient clinic

19%

24%

Family care centre

4%

12%

Multidisciplinary Care

98%

85%

CARDIOLOGY VISITS MEDIAN NUMBER

4

Prevalent

1

Incident





Pharmacological treatment in the current pregnancy

PROPHYLACTIC

LMWH

Low-dose aspirin (100–150 mg)

ANTIHYPERTENSIVES

Beta-blockers

Diuretics

Calcium channel blockers

● Angiotensin receptor blockers (ARBs)

● Angiotensin-converting enzyme inhibitors (ACE inhibitors)

HEART FAILURE THERAPY

Sacubitril/valsartan

DOPAMINE AGONIST

Bromocriptine

ANTIDIABETICS

● Prevalent n=52 ● Incident n=33





Labour and delivery

● Prevalent n=52 ● Incident n=33

Labour

39%

46%

Induction of labour

63%

47%

Caesarean section

69%

73%

General anaesthesia

9%

21%

Severe maternal morbidity
during labour/delivery

6%

30%

Urgent/ Emergency CS

16%

Prevalent

40%

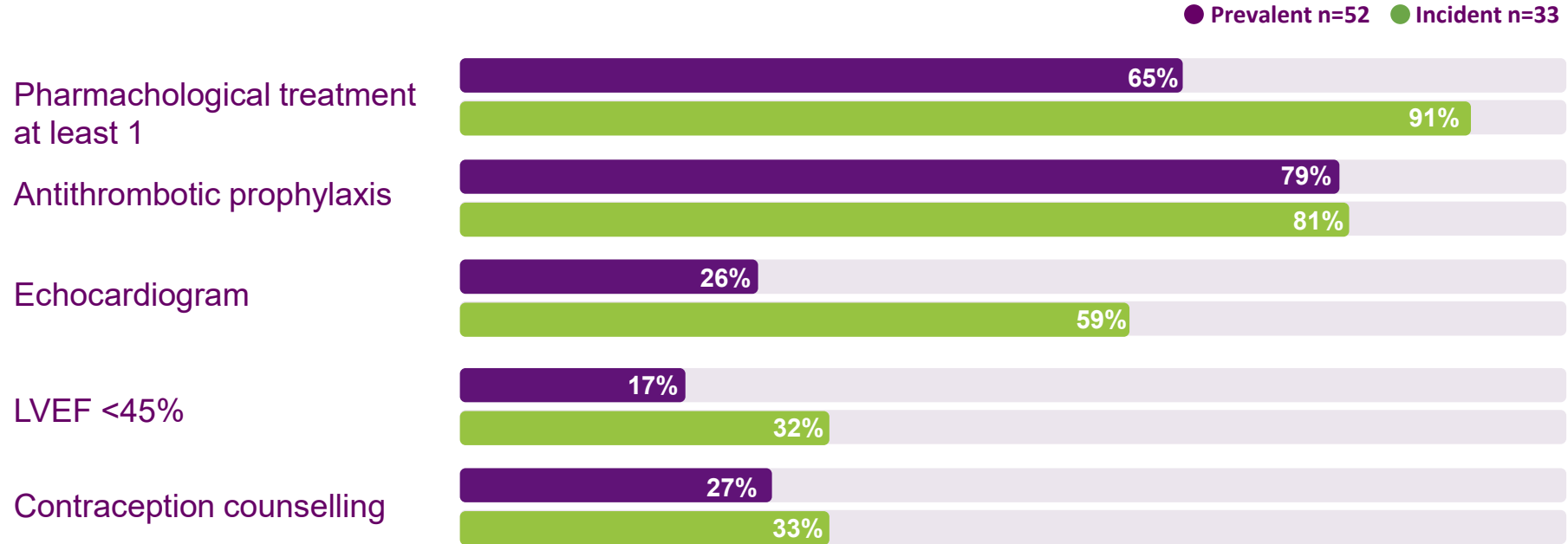
Incident

arrhythmia, PPH, heart failure





Postpartum





Maternal and feto-neonatal outcomes

MATERNAL

● Prevalent n=52 ● Incident n=33

Severe maternal morbidity

14%

Heart failure 42%, pulmonary oedema 15%, arrhythmia 12%, PPH 12% 76%

ICU admission

19%

52%

NEONATAL

Preterm birth
(*<37 weeks*)

22%

30%

Severe neonatal morbidity

6%

5%

NICU admission

12%

29%

Mortality

● No maternal deaths, no intrauterine deaths

● 1 neonatal death





Case-control comparison: key characteristics

 **85** cases vs 340 controls

Characteristics	Cases, %	Controls, %	Crude OR (95% CI)
Maternal age ≥ 35 years	51.8%	40.0%	1.74 (1.07–2.82)
BMI ≥ 30 kg/m ²	22.2%	8.2%	3.13 (1.63–6.01)
ART	10.6%	5.3%	2.25 (0.97–5.22)
Multiple pregnancy	4.7%	1.8%	2.85 (0.79–10.36)
Gestational hypertension	10.6%	4.5%	2.65 (1.12–6.28)
Preeclampsia	8.2%	0.9%	10.39 (2.63–41.12)

Abbreviation: ART, assisted reproductive technology; OR, odds ratio; CI, confidence intervals.





Multivariable analysis: factors associated with cardiomyopathy

Logistic regression model

Characteristics	adjOR (95% CI)
Age ≥ 35 years	1.28 (0.57–2.88)
BMI ≥ 30 kg/m ²	2.64 (1.31–5.29)
ART	1.40 (0.50–3.91)
Multiple pregnancy	2.01 (0.48–8.45)
Gestational hypertension	2.75 (1.11–6.81)
Preeclampsia	8.99 (2.12–38.1)

OR adjusted for all items in table.

Abbreviation: ART, assisted reproductive technology; adjOR, adjusted odds ratio; CI, confidence intervals.





Conclusions

- **Rare, but clinically important**

Cardiomyopathy affected 0.13 per 1,000 deliveries but was associated with substantial maternal morbidity.

- **Incident disease was much more severe**

Incident cases had lower LVEF, more heart failure and complications, higher rates of ICU admission and severe maternal morbidity.

- **Preconception care remains crucial**

In prevalent cardiomyopathy, cardiology assessment was frequent, but counselling and baseline BNP assessment were less consistently performed.

- **Risk factors**

BMI ≥ 30 kg/m², gestational hypertension and preeclampsia were significantly associated with cardiomyopathy.

Thank you!

