

A Acute
M Myocardial
I Infarction in
S Switzerland



**Universität
Zürich^{UZH}**

Smoking is associated with lower age at first myocardial infarction; this association is stronger in women compared to men

Caroline Bähler

August 2011, Basel

Background I

Chronic diseases are now the leading causes of death worldwide.

30% of all deaths due to chronic disease are attributable to cardiovascular disease.

Coronary heart disease is the single most common cause of death worldwide.

WHO (2008), Geneva; Strong *et al.* (2005), Lancet



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Background II

Smoking is one of the most important risk factors for myocardial infarction.

It has been shown that smokers suffer their first myocardial infarction earlier in life compared to nonsmokers.

This age difference seems to be greater in women compared to men.

Yusuf et al. (2004), Lancet



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Aim

The aim of the study was to examine whether these age and sex differences could also be found in the cohort of the Swiss national registry of myocardial infarction AMIS Plus.



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Method

All patients with first myocardial infarction enrolled in the AMIS Plus registry between 1999 and 2008 were included.

72 hospitals of different sizes and of all four language parts of Switzerland participated in AMIS Plus during this time.

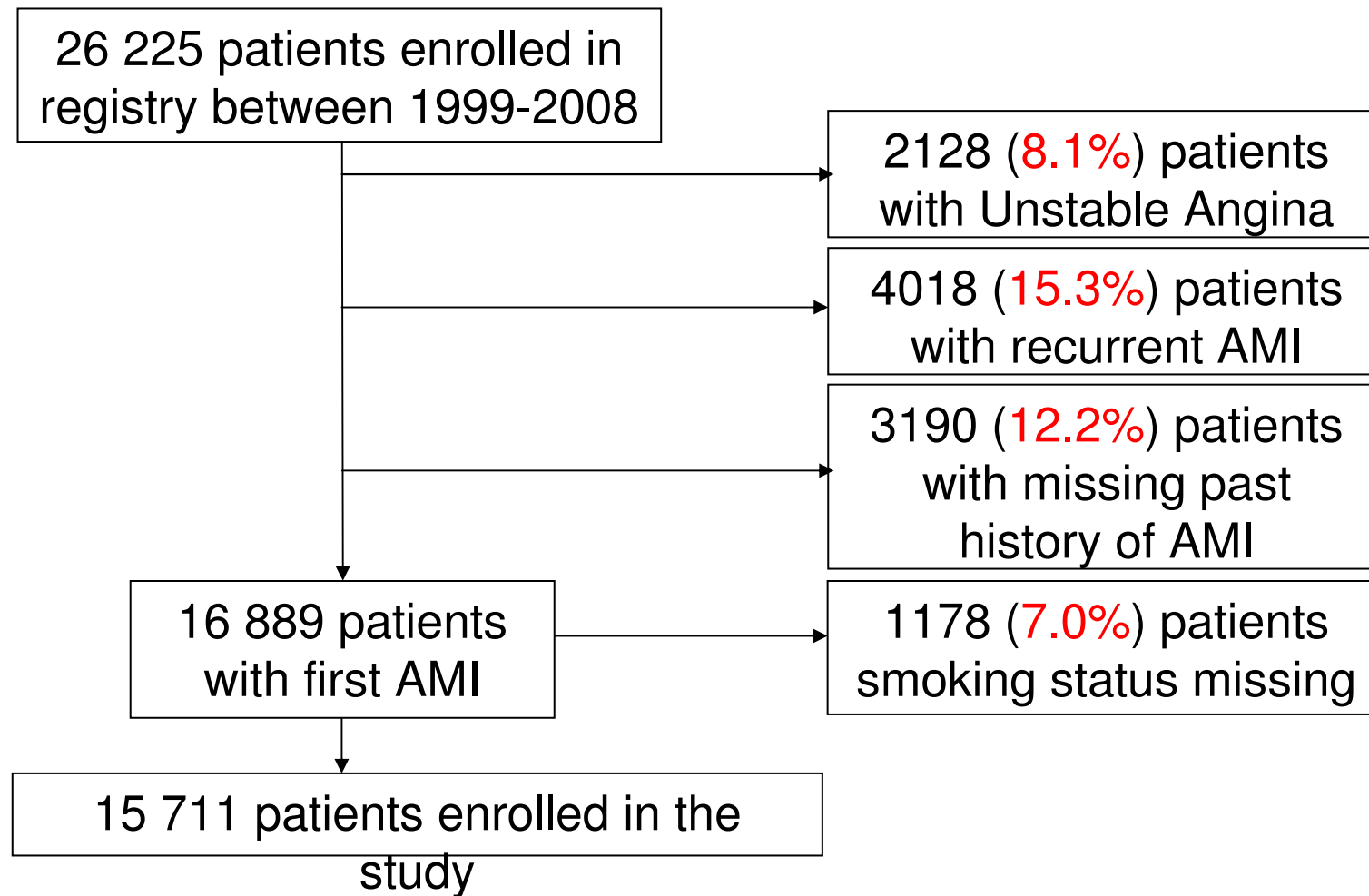
Several multivariate linear regression, interaction and sensitivity analyses were conducted. Verification of the regression model was performed by histogram and scatter plots of the residuals.



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Flow-chart of patient selection



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Patient characteristics

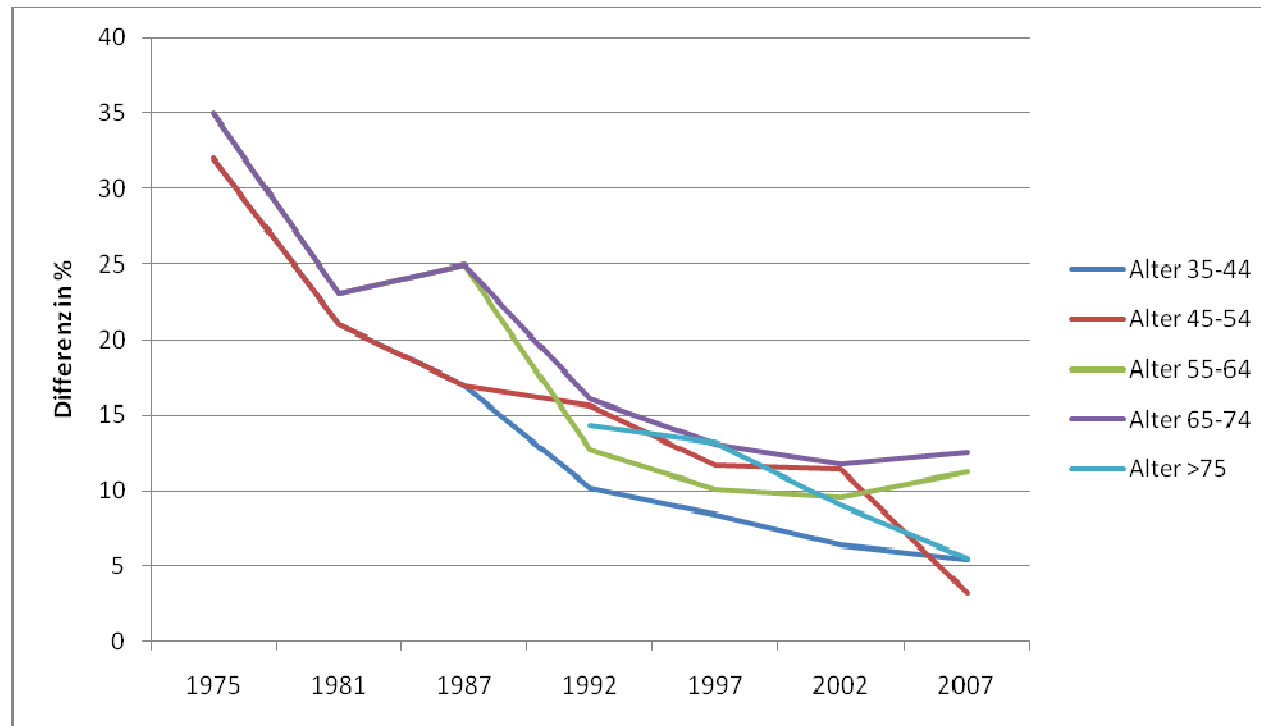
	Total	Male	Female
Number of Patients	15 711	72.7 %	27.3 %
Age	63.3	61.0	69.5
STEMI	63.8	64.7	61.4
Hypertension	56.1	51.6	68.0
Diabetes	16.3	14.9	19.9
Dyslipidemia	52.5	53.0	51.4
Current Smokers	43.0	48.1	29.4
Ex-Smokers	21.7	25.3	12.3
Overweight (BMI \geq 25)	63.5	67.3	52.8



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Sex-based differences in smoking in Switzerland between 1975 – 2007*



*1975-1987: Trend study by the SFA, 1992-2007: Swiss Health Survey



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Age at first myocardial infarction

		Age (in years)	Age difference
Male	Nonsmokers (n=5922)	65.9	10.2
	Smokers (n=5498)	55.7	
Female	Nonsmokers (n=3029)	73.4	13.1
	Smokers (n=1262)	60.3	



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Adjusted* age differences between smokers and nonsmokers

		regression coefficient	significance	95.0% CI	
Male	Absolute term	64.643	<0.001	63.911	65.374
	smokers vs. others	-8.686	<0.001	-9.214	-8.158
Female	Absolute term	67.659	<0.001	66.506	68.812
	smokers vs. others	-10.837	<0.001	-11.813	-9.860

*for risk factors (overweight, hypertension, dyslipidemia, diabetes mellitus), co-morbidities (peripheral vascular disease, cerebrovascular disease, chronic lung disease), regular cardiovascular medication intake before admission, Killip classification ≥ 3 , STEMI (n=8'907).



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Sensitivity analyses

1. sensitivity analysis of patients with known positive or negative family history of myocardial infarction (n=7149)

⇒ age difference* = **1.9 years** ($P=0.010$)

2. sensitivity analysis of patients with known positive or negative history of AP(n=8562)

⇒ age difference* = **1.9 years** ($P=0.006$)

* After adjustment for all variables mentioned in the interaction analysis



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Comparison of age differences between smokers and nonsmokers

	AMIS	Grundtvig	Herzog
Age difference among men	8.7	6.2	3.8
Age difference among women	10.8	13.7	9.0
Age difference between men and women	2.1	7.5	5.2

Grundtvig et al. (2009), Eur J Cardiovasc Prev Rehabil

Herzog et al. (2007), Circulation



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The Marlboro Man



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Conclusions

Smokers suffered a first myocardial infarction **9.2 years** earlier in life than nonsmokers !

This age difference was significantly higher in women than in men !



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Limitations

- Unmeasured factors
- Assessment bias
- Social desirability
- Risk factors were treated as dichotomous rather than continuous variables



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Relevance

“In Switzerland, 1/5 of the population is being treated for a cardiovascular disease...”

Künzli et Probst-Hensch (2011), PHS Newsletter Editorial

The younger the patient is, the greater the sex-specific distinction in terms of mortality during hospitalization.

The mortality rate of women under 50 years of age was double that of the male heart patients.

Vaccarino et al. (1999) N Engl J Med



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Implications

Public health campaigns concerning smoking should focus on:

- sex-specific differences
- timely preventive measures

The data reinforce the latest campaign of the FOPH “Smoke free” also addressing young women.



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SMOKE FREE

Die neue Freiheit lässt dir beide Beine.

Die freie Welt von SmokeFree. Jetzt Entzünden.

Wussten Sie schon
Mit SmokeFree haben Sie mehr Ausdauer.
[Weitere Vorteile](#)

Neuster Tipp
18.07.2011 | Jonas M.
Gegen Entzugserscheinungen: Schliessen Sie die Augen und konzentrieren Sie sich auf ihre K...
[Mehr Tipps](#)

SmokeFree-Päckli bestellen
Machen Sie einen grossen Schritt in die Freiheit. Bestellen Sie SmokeFree. Keine Zigarette ist besser.
[Ich will ein SmokeFree-Päckli mit Tipps und Vorteilen](#)

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