

Risk factors of coronary heart disease in primary care patients: Results of the prospective longitudinal DETECT program.

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Background

The WHO estimates that in the year 2000, 16.7 million people died from cardiovascular disease (CVD), accounting for 30.3% of all death globally¹. Many cardiovascular events that lead to high short term morbidity and mortality can be prevented or delayed by management of risk factors. Risk factors include hypertension, dyslipidaemia, smoking, obesity, and a sedentary lifestyle. These risk factors were determined in community surveys as well as in clinical trials, however, little is known about their prevalence in primary care patients.

Aims

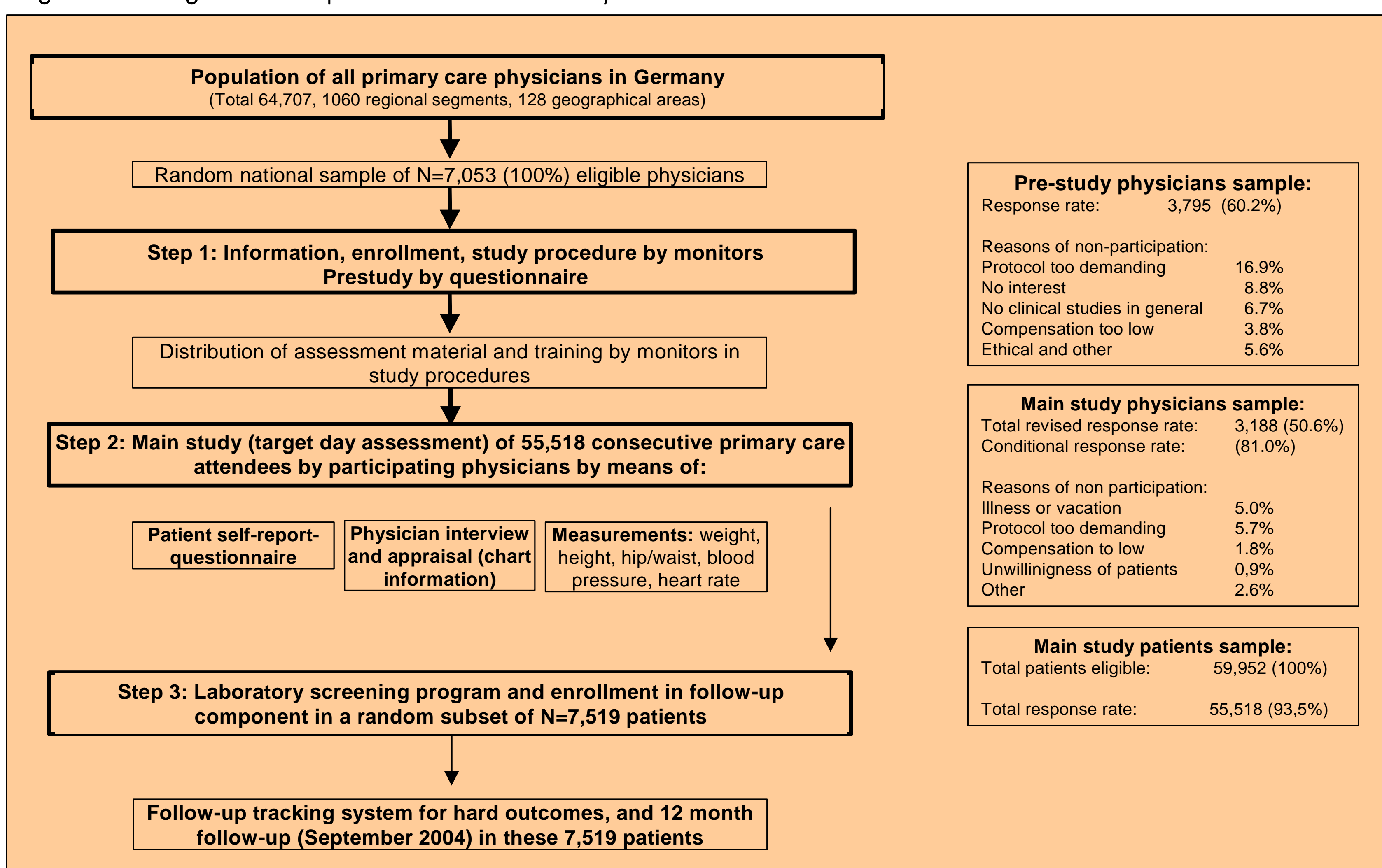
The epidemiological study DETECT² (Diabetes-Cardiovascular Risk Evaluation: Targets and Essential Data for Commitment of Treatment) was launched to identify the reasons, the extent and the short-term consequences of unmet needs in patients with high CV risk in a representative sample in primary care in Germany. This evaluation focused on the prevalence of different risk factors and their co-occurrence and the extent and quality of treatment.

Methods

Design:

DETECT is a large multistage cross-sectional study of 55,518 unselected consecutive patients (59% women and 41% men; over 18 years, mean age 53.9 years) in 3,188 primary care offices in Germany (73% general medicine and 27% internal medicine) with a prospective 12-months component in a random subset of 7,519 patients, characterized additionally by an extensive standardized laboratory program with focus on CV risk assessments. Patients' self-assessments and physicians' assessments of each patient were obtained. The data reported are based exclusively on the laboratory subset of patients and are not yet adjusted to non-response and sampling design effects. Further details are available at <http://www.detect-studie.de>.

Figure 1: Design and sample of the DETECT study



Risk Factors:

For all patients presence and absence of clinical risk factors, defined according to ESC definitions, were assessed at baseline and at one year follow-up.

Table 1: Risk factors used by the ESC to determine the 10-year risk for fatal CVD:

	low risk patients (< 5% risk of fatal CVD)	high risk patients (> 5% risk of fatal CVD)	Patients with diabetes
- Age	increasing age	increasing age	increasing age
- Smoker	smoking	smoking	smoking
- Sex	male	male	male
- Systolic blood pressure	> 140 mmHg	> 140 mmHg	> 130 mmHg
- Total Cholesterol	> 190 mg/dl	> 175 mg/dl	> 175 mg/dl
- Total Cholesterol : HDL Cholesterol ratio	> 5	> 5	> 5
Other risk factors described in the ESC guidelines:			
- Fasting Triglycerides	> 150 mg/dl	> 150 mg/dl	> 150 mg/dl
- LDL Cholesterol	> 115 mg/dl	> 100 mg/dl	> 100 mg/dl
- HDL cholesterol	< 40 mg/dl in men < 46 mg/dl in w omen	< 40 mg/dl in men < 46 mg/dl in w omen	< 40 mg/dl in men < 46 mg/dl in w omen
- Abdominal fat (waist circumference)	> 102 cm for man > 88 cm for w omen	> 102 cm for man > 88 cm for w omen	> 102 cm for man > 88 cm for w omen
- Overweight	BMI 25-30 kg/m ²	BMI 25-30 kg/m ²	BMI 25-30 kg/m ²
- Obesity	BMI > 30 kg/m ²	BMI > 30 kg/m ²	BMI > 30 kg/m ²
- Physical inactivity	physical inactivity	physical inactivity	physical inactivity
- Diastolic blood pressure	< 90 mmHg	< 90 mmHg	< 80 mmHg

Results

For patients of the laboratory subset the point prevalence rates of risk factors were determined at the initial examination (baseline) and at one year follow-up. Diabetic and non-diabetic patients were analyzed. Table 2 summarizes the point prevalence of risk factors determined at baseline (T0) and at one year follow-up (T1).

Table 2: Point prevalence rate of risk factors at baseline and at one year follow-up

	Non-diabetic patients in the Follow-up Laboratory Sample T0 (N=5,296)	Diabetic patients in the Follow-up Laboratory Sample T0 (N=1,205) ¹	Non-diabetic patients in the Laboratory Sample T1 (N=5,260)	Diabetic patients in the Laboratory Sample T1 (N=1,241) ¹
	% resp. Mean (Sd)	% resp. Mean (Sd)	% resp. Mean (Sd)	% resp. Mean (Sd)
Current Smoker	21	14	18	11
Age	56.28 (14.2)	65.31 (10.64)	57.21 (14.2)	66.36 (10.61)
Body Mass Index	26.59 (4.61)	29.64 (4.91)	26.86 (4.75)	29.92 (5.16)
Overweight (BMI ≥25)	60	84	62	84
Obesity (BMI ≥30)	20	43	22	46
abdominal fat for men >102cm for man and >88cm for woman	43	70	45	72
Physical inactive (patients self-report)	30	35	29	32
Systolic blood pressure [mmHg]	131.12 (18.02)	140.31 (19.09)	130.86 (18.1)	140.29 (17.67)
Systolic blood pressure [mmHg] > 130	41	63	41	63
Systolic blood pressure [mmHg] > 140	22	38	21	36
Diastolic blood pressure [mmHg]	80 (9.88)	81.01 (9.99)	79.6 (9.4)	81.04 (9.95)
Total Cholesterol (mg/dl)	224.88 (42.02)	218.49 (46.7)	231.7 (42.68)	220.3 (44.41)
Total Cholesterol (mg/dl) >190	79	75	85	75
Total Cholesterol (mg/dl) >175	89	84	92	85
LDL Cholesterol (mg/dl)	128.58 (33.45)	123.59 (34.37)	128.28 (32.93)	119.19 (32.24)
LDL Cholesterol (mg/dl) >115	64	58	63	53
LDL Cholesterol (mg/dl) >100	80	74	80	72
HDL Cholesterol (mg/dl)	56.15 (18.62)	47.5 (17.44)	65.77 (20.8)	57.99 (19.93)
HDL Cholesterol (mg/dl) <40 for man and HDL Cholesterol (mg/dl) <46 for woman	24	44	11	20
Triglycerides (mg/dl)	143.64 (102.42)	205.79 (208.54)	146.18 (107.41)	196.04 (145.41)
Triglycerides (mg/dl) >150	33	56	33	54

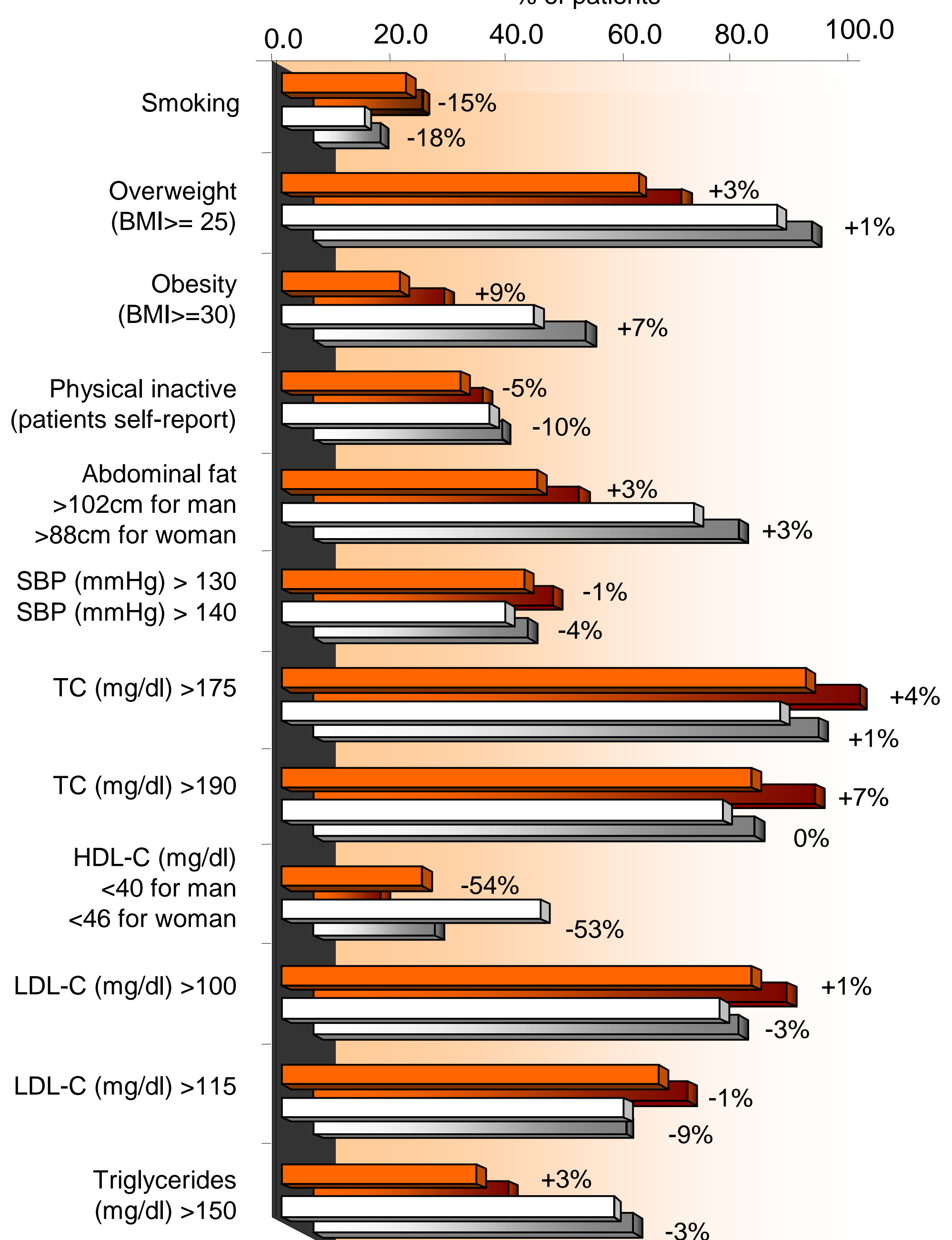
¹ Fasting plasma glucose >126 mg/dl or antidiabetic medication

The most prevalent risk factors for non-diabetic patients were: increased total cholesterol/LDL cholesterol, followed by overweight, increased blood pressure and physical inactivity. For diabetic patients the most prevalent risk factors were: Overweight and increased total cholesterol/LDL cholesterol followed by increased triglycerides and HDL cholesterol. Total cholesterol and LDL cholesterol are important risk factors for both diabetic and non-diabetic patients. Overweight, increased triglycerides and low HDL cholesterol values are striking risk factors in diabetic patients. However, triglycerides and HDL cholesterol are less important risk factors in non-diabetic patients.

A relative change in the prevalence of risk factors after one year is indicated in Figure 2.

Over the period of one year most risk factors did not change significantly except for the following: Smoking (relative reduction by 15% for non-diabetic patients and 18% for diabetic patients), physical inactivity (relative reduction by 5% for non-diabetic patients and 10% for diabetic patients), and HDL (relative reduction by 54% for non-diabetic patients and 53% for diabetic patients). Surprisingly HDL cholesterol increased dramatically (by > 50%) for diabetic and non-diabetic patients. Partly this could be explained by the reduction in smoking and the increase in physical activity.

Figure 2: Change in point prevalence rates of risk factors after one year follow-up



Legend:
 ■ Non-diabetic patients at baseline (N=5,296)
 ■ Non-diabetic patients at 1 year follow-up (N=5,260)
 ■ Diabetic patients at baseline (N=1,205)¹
 ■ Diabetic patients at 1 year follow-up (N=1,241)¹
¹ Fasting plasma glucose >126 mg/dl or antidiabetic medication

Summary

Primary care populations are characterized predominantly by a high proportion of high risk constellations, that pose considerable challenge for routine care. Only 3% of the patients had no risk factor, more than 60% of the patients had three or more risk factors and almost 20% of the patients had five or more risk factors.

Our results indicate that a significant proportion of patients in primary care have several risk factors and thus are at increased risk for CV events. However, the results of the one year follow-up examination show that treatment for diabetic and non-diabetic risk patients seems to be not optimal, clearly indicating the need of concerted efforts to improve treatment in primary care.