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SURF – SUrvey of Risk Factor management: first report of an international audit

MT Cooney[1], Z Reiner[2], W Sheu[3], L Ryden[4], J de Sutter[5], D De Bacquer[6], G DeBacker[6], A Mithal[7], N Chung[8], YT Lim[9], A Dudina[1], A Reynolds[1], K Dunney[1] and I Graham[1] (for the SURF investigators and the Prevention, Epidemiology and Population Science Section of the European Association for Cardiovascular Prevention and Rehabilitation)

Abstract

Background: Despite the fact that subjects with established coronary heart disease (CHD) are at high risk of further events and deserve meticulous secondary prevention, current audits such as EUROASPIRE show poor control of major risk factors. Ongoing monitoring is required. We present a new risk factor audit system, SURF (Survey of Risk Factor management), that can be conducted much more quickly and easily than existing audit systems and has the potential to allow hospitals of all sizes to participate in a unified international audit system that will complement EUROASPIRE. Initial experience indicates that SURF is truly simple to undertake in an international setting, and this is illustrated with the results of a substantive pilot project conducted in Europe and Asia.

Methods: The data collection system was designed to allow rapid and easy data collection as part of routine clinic work. Consecutive patients (aged 18 and over) with established CHD attending outpatient cardiology clinics were included. Information on demographics, previous coronary medical history, smoking history, history of hypertension, dyslipidaemia or diabetes, physical activity, attendance at cardiac rehabilitation, cardiac medications, lipid and glucose levels (and HbA1c in diabetics) if available within the last year, blood pressure, heart rate, body mass index, and waist circumference were collected using a one-page data collection sheet. Years spent in full time education was added as an additional question during the pilot phase.

Results: Three European countries – Ireland ($n = 251$), Belgium ($n = 122$), and Croatia ($n = 124$) – and four Asian countries – Singapore ($n = 142$), Taiwan ($n = 334$), India ($n = 97$), and Korea ($n = 45$) – were included in the pilot study. The results of initial field testing were confirmed in that it proved possible to collect data within 60–90 seconds per subject. There was poor control of several risk factors including high levels of physical inactivity (41–45%), overweight and obesity (59–78%), and ongoing smoking (15%). There were lower levels of individuals attending cardiac rehabilitation in Asia. More Europeans than Asians reached the low-density lipoprotein cholesterol target of <2.5mmol/l (66 vs. 59%) reflecting differences in medication usage. However, blood pressure control was superior in Asia, with 71% <140/90 compared with 66% of Europeans (NS).

Conclusions: This phase of SURF has confirmed its ease of use which should allow wide participation and the collection of representative risk factor data in subjects with CHD as well as ongoing data collection to monitor secular trends in risk factor control. Notwithstanding that this is a pilot study, the results suggest that risk factor control, particularly for lifestyle-related measures, is poor in both Europe and Asia.

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Introduction

The occurrence of cardiovascular disease (CVD), the most common cause of death in most developed and developing countries,[1] relates strongly to modifiable risk factors. Indisputable evidence exists which demonstrates that controlling these risk factors reduces risk of CVD in both primary and secondary prevention.[2–4] Those with established CVD are at highest risk of subsequent events and guidelines on CVD prevention recommend that this group receive the highest priority for preventive measures.[5]

However, audits of risk factor control in those with established coronary heart disease (CHD) in Europe have shown that a disappointingly large proportion of individuals do not reach guideline recommended risk factor targets.[6,7]

Ongoing audits of secondary prevention measures are required to monitor these trends in risk factor control and develop appropriate strategies for addressing current deficiencies. However, detailed risk factor audits tend to be expensive and time consuming. As a result they are often undertaken only in larger centres and results may not be representative of practice in the country as a whole.

SURF (SUrvey of Risk Factors) was conceived as a simple audit of risk factor management to allow wider and hopefully more representative usage to complement more detailed audits such as EUROASPIRE.[6] The survey is conducted at the time of usual clinic attendances rather than requiring the subject to return for a detailed examination in order to reduce selection and participation bias. The information collected is essentially the risk factor information which would be reviewed in a regular outpatient clinic visit, meaning that only minimal additional clinical work and resource expenditure is required.

After initial feasibility testing, SURF was presented to the Prevention, Epidemiology and Population Science Section of the European Association for Cardiovascular Disease Prevention and Rehabilitation and, after discussion and suggestions, endorsed as a Section flagship project, with section representation on the Steering Committee.

We have piloted SURF in three European and four Asian countries and present the results of the pilot survey here. It is planned to expand SURF progressively to obtain a wider view of national and international trends in risk factor control. SURF is also designed to be easily adapted for use in subjects with other forms of CVD, diabetes or indeed in apparently healthy subjects.

Materials and methods

Objectives

There were three objectives of this study: (i) to develop a very simple, quick and economical survey of risk factor management to complement more detailed audits; (ii) to audit secondary prevention measures in Europe and Asia; and (iii) to assess the feasibility of use in other geographic regions to allow global comparisons.

Study population

Consecutive patients with established CHD attending routine outpatient clinics for follow up were included. Patients were eligible for inclusion in the study if they had objectively confirmed CHD with or without admission to hospital and were aged 18 years or over. There was no upper age limit. A national coordinator was assigned in each participating country (Taiwan, Korea, India, Singapore, Belgium, Ireland, and Croatia) who invited participation of a number of different centres within that country. The Korean data were excluded from the present report because the clinic included was limited to individuals with diabetes.

As this is a pilot study, only a limited number of centres were included from each country. However, for the first phase of the main project, a sampling frame for the selection of centres to be included is outlined in the protocol, which is included in the supplementary material.

Data collection

The information detailed in Table 1 was recorded on a one-page data collection sheet. The full data collection sheet is available in the study protocol.

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Table 1. Information collected

Risk factor information	Diagnostic category[a]
Smoking history (current smoker, ex-smoker (quit >6 months ago), or never smoked)	Coronary artery bypass grafting
Physical activity (three categories – less, more, and equal to recommended level – defined as 30 minutes of moderately vigorous activity most days of the week)	Percutaneous coronary intervention
History of hypertension[a]	Acute coronary syndrome: cardiac chest pain at rest with objective evidence of acute ischaemia or infarction
History of dyslipidaemia[a]	Chronic stable angina: clinical angina with objective confirmation from a clearly positive exercise ECG or ischaemia on perfusion imaging, or a coronary angiogram showing a narrowing of 70% or more in at least one coronary artery
History of diabetes (type 1 or type 2)[a]	Cardiac medications, recorded by category only
Attendance of cardiac rehabilitation (defined as either full or part attendance)	Antiplatelet agents
Measurements taken on the day of clinic visit	Statin
Systolic blood pressure	Other lipid-lowering agent
Diastolic blood pressure	Beta-blocker
Heart rate	Calcium-channel blocker
Weight	Diuretic
Height	ACE inhibitor
Waist circumference	Angiotensin-II receptor blocker
Most recent available laboratory measurements	Other antihypertensive agent
Total cholesterol	Nitrate
HDL cholesterol	Oral hypoglycaemic agents
LDL cholesterol	Insulin
Triglycerides	
Blood glucose	
HbA1c in diabetics only	

If several of the above diagnoses apply, the category furthest up the above list was used, in line with the procedure used for EUROASPIRE[6]; [a]Self-report of a previous diagnosis; ACE, angiotensin-converting enzyme; HDL, high-density lipoprotein; LDL, low-density lipoprotein.

Statistical analysis

Percentages were calculated for the categorical risk factors and for the medications. Mean levels of continuous risk factors were calculated. Student's t test, Fisher's Exact test, and Chi-squared test were used to assess for statistically significant differences between the risk factor levels in Europe and Asia, for continuous data, two group proportions, and multiple group proportions respectively. The distribution of triglyceride levels was positively skewed; for this reason, median values were calculated and differences were assessed for using the Mann–Whitney U-test.

The percentages achieving risk factor targets for the continuous variables were calculated. The targets used were those recommended in the fourth version of the European guidelines on CVD prevention:[5] total cholesterol <4.5 mmol/l, LDL cholesterol <2.5 mmol/l, blood pressure <140/90 mmHg, and high-density lipoprotein (HDL) cholesterol (≥1.2 mmol/l for women and ≥1.0 mmol/l for men). We also assessed the percentages reaching the following stricter targets which are recommended by the guidelines for those with established CHD, if feasible: total cholesterol <4 mmol/l, LDL cholesterol <2 mmol/l, and blood pressure <130/80 mmHg. Stricter lipid targets have been recommended in the 2011 European guidelines on the management of dyslipidaemia.[8] However, the achievement of these targets has not been assessed here since these were published after the start of the data collection for the project.

Body mass index (BMI) categories were defined as follows: underweight <18.5 kg/m^2, normal weight 18.5–24.9 kg/m^2, overweight 25–29.9 kg/m^2, obese I 30–34.9 kg/m^2, obese II 35–39.9 kg/m^2, obese III ≥40 kg/m^2. Abdominal obesity defined as waist circumference ≥ 88 cm in women and ≥ 102 cm in men.

Results

It proved possible to collect the data in 60–90 seconds per subject. Three European countries – Ireland ($n = 251$), Belgium ($n = 122$), and Croatia ($n = 124$) – and four Asian countries – Singapore ($n = 142$), Taiwan ($n = 334$), India ($n = 97$), and Korea ($n = 45$) – were included in the pilot study. The Korean data, which referred solely to diabetic patients, are not included in the results tables.

Demographics

Table 2 shows the demographics for the participants in Europe and Asia. In both Europe and Asia, women

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accounted for 21% of the group. The mean age of men in both Europe and Asia was 64 years. Women tended to be older, with a mean age of 68 years in Europe and 66 years in Asia. Numbers of private patients were higher in Asia, and European patients were more likely to have been recently admitted to hospital for CHD. There were also differences in the categories of CHD for which individuals were included in the survey. Coronary artery bypass grafting was more common in Europe; conversely, percutaneous coronary intervention was more common in Asia. Asian individuals were significantly less likely to participate in cardiac rehabilitation programmes ($p < 0.001$).

Lifestyle risk factors

Table 3 shows the percentages with lifestyle-associated risk factors. Current smoking levels for men were similar in European and Asian men (17%). However, there were more never smokers amongst the Asian participants. Amongst women, there were significantly fewer current smokers in Asia, where they accounted for only 2%, compared to 11% of European women.

A large proportion of all participants were taking less than the recommended amount of physical activity. Exceeding the recommended amount of physical activity was more common in Asian men and women.

European participants were more likely to be overweight and obese ($p < 0.0001$ for men). Abdominal obesity was particularly common in European participants and 86% of European women and 45% of European men were in this category.

Lipids

Table 4 shows the lipid levels and targets in Asian and European men and women. The percentage reporting previously diagnosed dyslipidaemia was higher in European participants ($p < 0.0001$). LDL cholesterol levels were highest in Asian women, with a mean level of 2.7 mmol/l and only 28% reaching the lower LDL cholesterol target of <2 mmol/l. However, numbers reaching this target for all groups were poor: 42% in European men, 34% in Asian men and 30% in European women.

For HDL cholesterol, approximately 60% of participants in both Europe and Asia were at or above the level recommended by the European guidelines. Asian participants were less likely to have had their lipids measured within the previous year ($p < 0.0001$). Triglyceride levels were lower in Asian participants, with marginal statistical significance ($p = 0.0326$).

Blood pressure

Table 5 shows the blood pressure levels and targets. The percentage of participants reporting previously diagnosed hypertension was high, approximately 70% in both Asian and European participants, higher in women. Looking at the stricter blood pressure target of <130/80 mmHg, which is recommended for these high-risk individuals, the levels achieving targets were low throughout. Heart rates were significantly higher in Asian participants than their European counterparts.

Diabetes

Table 6 shows the risk factors related to diabetes. In both Asian men and women there was a higher percentage of known diabetics, 32% of Asians compared to 22% of Europeans ($p = 0.0003$).

Glycaemic control was unsatisfactory in both continents. Mean HbA1c levels ranged from 7.2% to 7.6%. Glycaemic control was significantly worse in Asia than Europe ($p = 0.0003$ for difference in mean

Table 2. Demographic characteristics

	Both genders			Men		Women	
	Europe	Asia	*p*	Europe	Asia	Europe	Asia
Number of patients	497	573		391	454	106	119
Age (years)	64.5	64.6	0.8910	64 ± 10 (387)	64 ± 13 (453)	68 ± 11 (105)	66 ± 11 (119)
Private patients	12	37	<0.0001	14	38	5	33
Admitted for CHD within last 1 year	50	29	<0.0001	49	30	51	27
Attending cardiac rehabilitation	61	17	<0.0001	63	18	54	13
Coronary artery bypass grafting	22	14	<0.0001	23	14	20	14
Percutaneous coronary intervention	37	57		39	60	31	47
Acute coronary syndrome	19	7		15	6	30	10
Chronic stable angina	22	22		23	20	19	29

Values are mean ± SD (number of measurements) or %; CHD, coronary heart disease.

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Table 3. Lifestyle risk factors

	Both genders			Men		Women	
	Europe	Asia	*p*	Europe	Asia	Europe	Asia
Current smokers	15	14	<0.0001	17	17	11	2
Ex-smokers	50	33		56	40	28	6
Never smoked	35	53		27	43	61	92
Less than recommended physical activity levels	41	45	0.0002	37	42	55	56
Recommended physical activity levels	40	28		41	29	35	25
More than recommended physical activity levels	19	27		22	29	10	19
Waist circumference (cm)	101 ± 11.2 (204)	92 ± 11 (560)	<0.0001	102 ± 11 (169)	92 ± 11 (445)	99 ± 11 (35)	90 ± 11 (114)
Abdominal obesity	52	26	<0.0001	45	19	86	54
Body mass index (kg/m^2)	28.7 ± 4.6 (433)	26.2 ± 4.7 (569)	<0.0001	28.7 ± 4.2 (345)	26.1 ± 4.7 (450)	28.5 ± 5.8 (88)	26.6 ± 4.3 (118)
Overweight or obese	78	59	<0.0001	82	58	69	60
Obese	33	16	<0.0001	32	15	36	19

Values are % or mean ± SD (number of measurements).

Table 4. Lipid risk factors

	Both genders			Men		Women	
	Europe	Asia	*p*	Europe	Asia	Europe	Asia
Previously diagnosed dyslipidaemia	77	61	<0.0001	78	61	73	61
TC	4.2 ± 1.2 (393)	4.2 ± 1.0 (501)	1.0	4.1 ± 1.1 (312)	4.2 ± 1.0 (396)	4.6 ± 1.5 (81)	4.5 ± 1.2 (104)
TC on target (<4.5)	65	66	0.7119	68	68	54	60
TC on target (<4)	49	46	0.3898	52	47	35	39
LDL	2.3 ± 0.9 (381)	2.5 ± 0.9 (409)	0.0022	2.3 ± 0.9 (302)	2.4 ± 0.9 (322)	2.4 ± 0.9 (79)	2.7 ± 1.0 (86)
LDL on target (<2.5)	66	59	0.0447	68	61	58	49
LDL on target (<2)	39	33	0.0628	42	34	30	28
HDL	1.1 ± 0.4 (385)	1.2 ± 0.5 (480)	0.0006	1.1 ± 0.4 (306)	1.1 ± 0.4 (380)	1.3 ± 0.4 (79)	1.3 ± 0.5 (99)
HDL on target (≥1.0 in men, ≥1.2 in women)	61	57	0.2349	60	59	62	51
Triglycerides	1.4 (387)	1.3 (501)	0.0326	1.39 (306)	1.30 (394)	1.49 (81)	1.29 (107)
With bloods in last year	79	67	<0.0001	80	67	76	67

Values are %, mean ± SD or median (number of measurements). All lipid measurements in mmol/l; HDL, high-density lipoprotein; LDL, low-density lipoprotein; TC, total cholesterol.

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Table 5. Blood pressure risk factors

	Both genders			Men		Women	
	Europe	Asia	*p*	Europe	Asia	Europe	Asia
Previously diagnosed hypertension	71	70	0.7241	70	68	75	76
Systolic BP (mmHg)	131 ± 17 (493)	129 ± 18 (573)	0.0652	130 ± 16 (386)	129 ± 18 (453)	131 ± 20 (106)	132 ± 19 (119)
Diastolic BP (mmHg)	76 ± 10 (493)	75 ± 11 (573)	0.1158	76 ± 10 (386)	75 ± 10 (453)	75 ± 11 (106)	74 ± 11 (119)
BP on target <140/90 (mmHg)	66	71	0.0626	66	72	62	67
BP on target <130/80 (mmHg)	33	39	0.0619	34	39	29	37
Heart rate (bpm)	70 ± 14 (490)	75	<0.0001	69 ± 14 (385)	74 ± 12 (453)	72 ± 14 (104)	77 ± 14 (77)

Values are % or mean ± SD (number of measurements). All blood pressure measurements in mmHg; BP, blood pressure.

HbA1c levels). The highest percentage of individuals with diabetes with HbA1c ≤7% was in European men but was only 62%; numbers reaching this level were as low as 30% in European women. Furthermore the percentage of European women with diabetes who had an HbA1c measurement available was only 43%.

The numbers with undiagnosed diabetes (fasting glucose ≥7 mmol/l) were very similar in Europe and Asia, ranging from 8% in European men to 10% in Asian men.

Medications

Table 7 details the medication usage amongst Asian and European participants. Medications which were more likely to be used in Europe than Asia included statins, beta-blockers, angiotensin-converting enzyme inhibitors, diuretics, and insulin. Those more likely to be used in Asia were antiplatelet therapy, calcium-channel blockers, angiotensin-II receptor blockers, nitrates, and oral hypoglycaemic agents. European figures for antiplatelet usage were equal to Asian (93%) when Croatia was excluded.

Gender differences in risk factor control

Women tended to be older and in Europe, they were less likely to be private patients. In both Europe and Asia, women were less likely to be included in the study due to previous percutaneous coronary intervention. Conversely, higher percentages of women were included because of acute coronary syndrome. However, this does not mean more women had acute coronary syndrome, since men coded as percutaneous coronary intervention could also have had acute coronary syndrome in their medical history. Women were significantly less likely to be current or ex-smokers than their male counterparts. Both European and Asian women took significantly less physical activity than men. Women both from Asia and Europe were significantly more likely to have abdominal obesity. Total cholesterol levels were significantly higher in women. HDL cholesterol levels were also higher, but when using the gender-specific HDL targets, proportions achieving target levels were similar.

Blood pressure control was similar in men and women. Heart rates were higher in European and Asian women. Glycaemic control was similar in men and women from Asia. Glycaemic control was worse in European women than European men, although the differences were not statistically significant. European women were less likely to be on statin therapy than European men. There were no other important gender differences in medication usage.

Discussion

We report a pilot or feasibility study of a new and very simple audit of risk factor management in subjects with known CHD. This pilot phase of the SURF audit has demonstrated that it is easy to administer and data can be collected quickly requiring virtually no additional clinic time or resources. The success of this pilot phase means that extra centres can be included in the next phases of the project, which will improve its representativeness. Already over 10 extra countries have expressed interest in joining the project. The fact that participants are those who are attending for routine outpatient follow up means that the results are reflective of the everyday clinical practice of secondary prevention in CHD patients. The ease of administration will also facilitate repeat audits to monitor trends in secondary prevention and to expand the study population. Slight modifications in the format would allow this survey to be adapted for monitoring risk factor control in those with diabetes, those with pre-existing cerebrovascular disease, renal disease, and peripheral vascular disease, as well as high-risk asymptomatic individuals.

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Table 6. Risk factors related to diabetes

	Both genders			Men		Women	
	Europe	Asia	p	Europe	Asia	Europe	Asia
Individuals with diabetes	22	32	0.0003	22	31	22	37
Individuals with diabetes with HbA1c available	57	75	0.0013	60	74	43	75
Fasting glucose in individuals with diabetes	7.9 ± 3.3 (63)	8.2 ± 3.5 (118)	0.5760	8.1 ± 3.6 (49)	8.4 ± 3.7 (91)	7.2 ± 2.1 (14)	7.7 ± 2.7 (26)
Fasting glucose in individuals without diabetes	5.6 ± 1.1 (272)	5.6 ± 1.1 (198)	1.0	5.7 ± 1.1 (219)	5.7 ± 1.2 (156)	5.6 ± 1.1 (53)	5.7 ± 1.4 (44)
HbA1c in individuals with diabetes	7.2 ± 1.3 (62)	7.6 ± 1.4 (139)	0.0574	7.2 ± 1.3 (52)	7.6 ± 1.5 (105)	7.5 ± 10 (1.1)	7.6 ± 1.4 (33)
Individuals with diabetes achieving HbA1c ≤7	56	39	0.0193	62	38	30	42
Individuals with diabetes achieving HbA1c ≤6.5	40	24	0.0151	44	27	20	18
Individuals with diabetes achieving fasting glucose ≤6	32	27	0.4971	31	24	36	38
Individuals without diabetes with fasting glucose available	72	51	<0.0001	73	49	65	59
Individuals without diabetes with glucose ≥7 mmol/l	8	10	0.4508	8	10	9	9

Values are % or mean ± SD (number of measurements). All blood glucose measurements in mmol/l.

This pilot SURF audit has shown that risk factors are currently not appropriately controlled, despite high levels of medication usage. It is interesting to compare the SURF results to those of the most recent EUROASPIRE audit, EUROASPIRE III, which took place in 2006, as shown in Figures 1 and 2. However, it should be remembered that there are substantial differences between EUROASPIRE and SURF, as discussed below.

Comparing EUROASPIRE III to the SURF European results, risk factor levels and medication usage are very similar, especially the lifestyle risk factors. However, blood pressure and LDL cholesterol appear to be better controlled in SURF(Europe).[7] Obesity and abdominal obesity in particular is a problem, especially in European women, where 86% were in the abdominally obese category.

The overall percentage of individuals with diabetes was higher in the Asian group; 37% of women and 31% of men compared to 22% in European men and women. This percentage was lower than in the most recent EUROASPIRE audit, where individuals with diabetes were 23% of men and 30% of women.

Regarding lipid targets, only 49−68% achieved the LDL cholesterol target of <2.5 mmol/l and 28−42% achieved the <2 mmol/l target. Asians were less likely to achieve either target which is probably related to the significantly lower usage of statins amongst Asians; 63 vs. 87% in men and 60 vs. 78% in women. Blood pressure targets (<140/90 mmHg) were achieved in 62−72%. This is an improvement on the EUROASPIRE III figure of 50%.[7] Amongst diabetics; relatively few were achieving the recommended HbA1c of ≤7%. In European women only 30% achieved this target. The best glycaemic control was amongst European men, of whom 62% were achieving this target.

Despite the poor control of most risk factors in this high-risk group, many had not had recent laboratory measurements. In Asian participants in this study, one-third had no recent laboratory measurements. This was also seen in patients with diabetes, where only 43% of European women with diabetes had a recent HbA1c measurement. This issue needs to be addressed in order to improve implementation of guidelines on prevention of CVD.[5]

Some of the more marked differences between Asian and European risk factors relate to body weight measurements. In both men and women from Europe a higher percentage were overweight, obese, and had abdominal obesity. It should be noted that the same definitions of obesity and abdominal obesity have been used for Asian and European populations and therefore proportions of overweight, obesity, and abdominal obesity in Asian participants may be

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Table 7. Medication usage

	Both genders			Men		Women	
	Europe	Asia	*p*	Europe	Asia	Europe	Asia
On antiplatelets	88	93	0.0053	89	94	84	90
On statins	85	62	<0.0001	87	63	78	60
On other lipid-lowering agents	13	10	0.1257	14	11	8	8
On beta-blockers	76	47	<0.0001	74	48	84	41
On Ca^{2+}-channel blockers	19	38	<0.0001	19	35	21	48
On other antihypertensives	8	5	0.0466	9	6	4	2
On ACE inhibitors	54	34	<0.0001	55	34	53	35
On ARB	13	24	<0.0001	11	23	17	27
On either ACE inhibitor or ARB	66	58	0.0077	65	57	70	61
On diuretics	25	18	0.0055	24	18	25	17
On nitrates	22	49	<0.0001	21	47	25	53
On oral hypoglycaemic agents	9	16	0.0007	9	16	10	15
On insulin	13	7	0.0010	13	6	13	8

Values are %; ACE, angiotensin-converting enzyme; ARB, angiotensin-II receptor blocker.

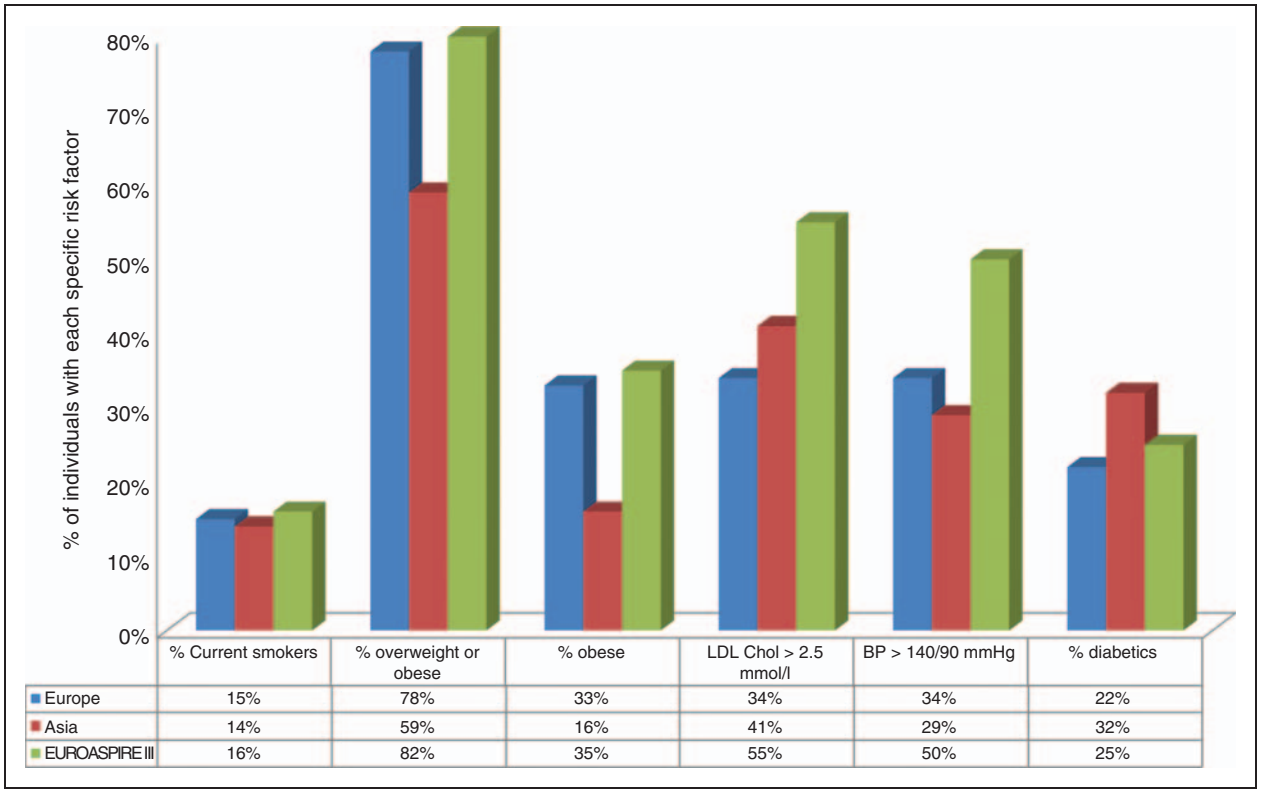

Figure 1. Risk factor levels in Europe and Asia in SURF and in Europe in 2006 in EUROASPIRE III.

underestimated. Asians are known to have higher morbidity at lower cut-off points for waist circumference and BMI than white Caucasians.[9] Reflecting this, the WHO has recommended additional lower BMI cut-off points for public health action in Asian countries; however, the international definitions remain those used in this report.[10] This issue remains controversial, however; a recent large analysis of pooled Asian cohort studies

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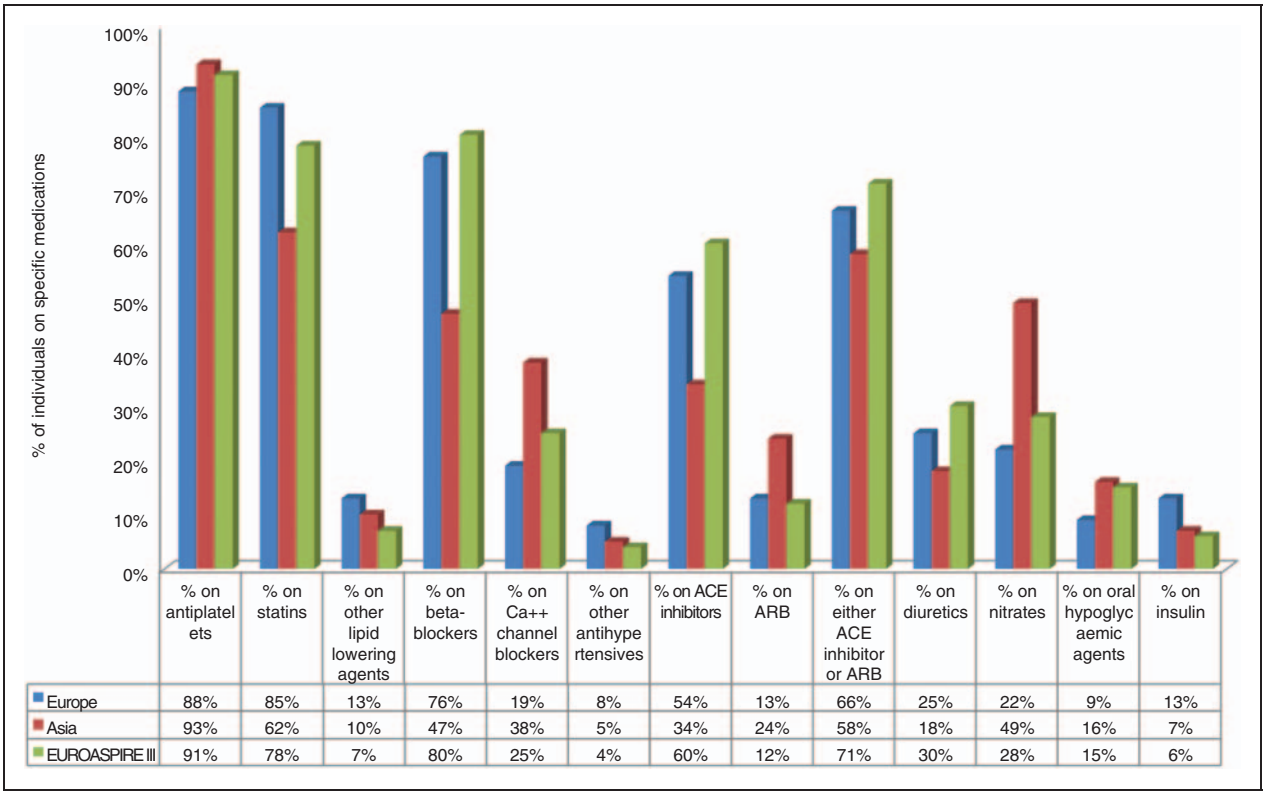

	% on antiplatelets	% on statins	% on other lipid lowering agents	% on beta-blockers	% on Ca++ channel blockers	% on other antihypertensives	% on ACE inhibitors	% on ARB	% on either ACE inhibitor or ARB	% on diuretics	% on nitrates	% on oral hypoglycaemic agents	% on insulin
Europe	88%	85%	13%	76%	19%	8%	54%	13%	66%	25%	22%	9%	13%
Asia	93%	62%	10%	47%	38%	5%	34%	24%	58%	18%	49%	16%	7%
EUROASPIRE III	91%	78%	7%	80%	25%	4%	60%	12%	71%	30%	28%	15%	6%

Figure 2. Medication usage in Europe and Asia in SURF and in Europe in 2006 in EUROASPIRE III.

has examined the issue of BMI in Asian individuals and did not recommended a change in the BMI cut-off points.[11] A study of Chinese adults has suggested a more appropriate cut off for adiposity in this population of 80 cm for men and women, as opposed to the current 80 cm in women and 94 cm in men.[12] Anyhow, the results of SURF, which are similar to the results of EUROASPIRE III concerning overweight and obesity confirm that these risk factors not only remain a major public health problem but are reaching epidemic proportions in coronary patients worldwide.[13] Patients' awareness and current management of obesity seem to be inadequate which might be a result of unsatisfactory attitude of physicians towards obesity as a risk factor.[14,15]

Strengths of this project include the ease of administration. The project is particularly cost effective, and as such allows the survey to be undertaken in multiple countries, which will eventually allow international comparisons of risk factor control. As a pilot or feasibility study, this report has definite limitations. The centres were chosen at the discretion of the investigators and therefore the representativeness of the results is unknown. A structured sampling frame has been proposed for the first phase of the main SURF project and this should allow for increased representativeness, particularly because of the ease with which the survey can be administered. Laboratory measurements were not standardized but this may be useful because it is local results that are used to trigger intervention. As mentioned above there are limitations when comparing SURF European data with EUROASPIRE III data, for example EUROASPIRE III included 22 countries, as compared with only three European countries in this SURF pilot study and the diagnostic categories differ because SURF includes an additional category; chronic stable angina.

The formal launch of SURF is now planned. Additional centres in Europe, Asia, and the Middle East are being recruited. A simple sampling frame to improve representativeness has been agreed. A simple additional question has been added as a proxy for social class – 'At what age did you complete full time education?' In general it is planned to retain simplicity and to avoid the urge to introduce more detailed and complex questions. Additionally, data collection for a pilot study of SURF in primary care practices in Ireland is to commence shortly. This will audit risk factor management in both primary and secondary prevention and should provide some interesting insights and comparisons with hospital-based care.

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Conclusion

This phase of SURF has confirmed its ease of use, which should allow wide participation and the collection of representative risk factor data in subjects with CHD as well as ongoing data collection to monitor secular trends in risk factor control. Given that this is a pilot study, the results suggest that risk factor control, particularly for lifestyle-related measures, is poor in both Europe and Asia.

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Conflict of interest

None declared.

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