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# A Pilot Croatian Survey of Risk Factor (CRO-SURF) Management in Patients with Cardiovascular Disease

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## ABSTRACT

A pilot survey was performed to determine the presence of known risk factors for cardiovascular disease in Croatian patients with diagnosed coronary heart disease (CHD) using a new questionnaire. The idea was to test this new and very simple questionnaire but also to compare the data collected in this pilot survey with the results of the last Croatian national survey (TASPIC-CRO V) and so to obtain the information whether secondary prevention has improved between 2003 and 2010. 122 patients with established CHD (88 men, 34 women, mean age 66.3 years) treated in Zagreb University Hospital Center were included. Data collection was based on filling the SURF questionnaire right after the clinical exam or later using review of medical records. Patients were hospitalized because of CABG (1%), PCI (8%), ACS (35%) or chronic stable angina (56%). The history of arterial hypertension had 95% patients (however, on admission mean systolic pressure was 130.1 mmHg, diastolic 76.8 mmHg), 90% had dyslipidaemia (total cholesterol <4.5 mmol/L had 43%; <4.0 mmol/L 33%; LDL-cholesterol <2.5 mmol/L 49%; <2.0 mmol/L 32%; HDL >1.2 mmol/L (women) or >1.0 mmol/L (men) had 67%), 25% had diabetes which was poorly regulated (mean HbA1c 8.2%), 18% were active smokers. After discharge only 24% performed cardiac rehabilitation. Mean body mass index of the patients was 28.3 kg/m<sup>2</sup> (32% were obese, 72% overweight). Compared to TASPIC-CRO V there was lower usage of aspirin than recommended on discharge. This was also true for statin therapy. More patients were taking beta blockers, calcium antagonists and diuretics than 7 years ago. This pilot survey showed that CRO-SURF questionnaire is short, quick, effective and simple to use. It is a good and cost effective tool to collect data on CVD risk factors and their management. The results obtained by using it indicate that there is still a high prevalence of modifiable risk factors in Croatian patients with CHD.

**Key words:** prevention, cardiovascular disease, risk factors, arterial hypertension, dyslipidemia

## Introduction

Cardiovascular disease (CVD) is the most important cause of death in Croatia and worldwide<sup>1</sup>. Most important risk factors for CVD such as smoking, increased serum cholesterol, elevated blood pressure, diabetes, physical inactivity, overweight and obesity are well defined and modifiable<sup>2-4</sup>. Risk factor modification reduces mortality, especially in patients with established CVD<sup>5</sup>. The efficacy of risk factor intervention in subjects with established coronary heart disease (CHD) who are at highest risk in different European countries has been shown in EUROASPIRE III survey<sup>6</sup>. Croatia participated in this survey and the results for Croatia were very similar to

the average European results<sup>7</sup>. This survey showed that CVD risk factor control is not optimal. Many patients who are at highest risk for the next cardiovascular event have not achieved the risk factor targets as established by the Joint European prevention guidelines<sup>8</sup>. However, the problem with EUROASPIRE was that the protocol and questionnaire were very complex and that the cost of this survey was very high. Therefore such an approach is not appropriate to be used in everyday life for collecting data in a simple and inexpensive way. Since there was a need for a much simpler method of investigating the CVD risk factor control in patients with established

CHD, a new questionnaire was developed and a pilot survey was performed to test it in Croatia. The obtained data may complement the information collected by EU-ROASPIRE and expand them.

The aim of this pilot study was, using SURF questionnaire, to determine its efficacy but also to investigate whether there is any improvement concerning the risk factors in Croatian patients with CHD when compared with the results of TASPIC-CRO – the last survey performed on Croatian CHD patients seven years ago<sup>9</sup>.

### Sample and Methods

122 consecutive patients (88 men, 34 women) were included in this pilot survey. This number was based upon previously performed power analysis. Most of them were recruited in Department of Cardiovascular Diseases (104) and 18 were recruited in Department for Internal Diseases, Zagreb University Hospital Center. Data were collected by the bedside by doctors and specialised nurses. Inclusion criteria were: The history of CHD, Coronary artery bypass surgery (CABG), percutaneous coronary intervention (PCI), acute coronary syndrome (ACS – cardiac chest pain at rest with serial ischaemic ECG changes and/or a rise in troponin or CKMB levels), or stable angina pectoris (clinical angina pectoris with at least one of: positive exercise ECG; positive stress myocardial perfusion scan or at least one stenosis of 70% or more on coronary arteriography). Demographic data included date of birth, date of examination, category of CHD and whether the patient was admitted in the previous one year. Information on attendance at cardiac rehabilitation was noted, smoking, physical activity, educational level, history of known hypertension, dyslipidaemia and diabetes as well. Drug usage was recorded by category only. Data were stored in predefined spread sheets and upon completion forwarded to the data collection centre. Continuous variables are presented as arithmetic means ± SD if normally distributed. If not, medians and geometric means are used. Categorical variables are presented as percentages.

### Results

This pilot project included 122 patients (mean age 66.3 years). The reason of hospitalisation was as follows: CABG 1%; PCI 8%; ACS 35%; chronic stable angina 56%. 95% of patients had arterial hypertension, 90% had dyslipidaemia and 25% diabetes. Every fifth patient (18%) still smokes, and about the same number quitted smoking (20%), 62% have never smoked. After the discharge from hospital only 24% of patients performed some form of specialized cardiac rehabilitation (Figure 1).

Mean systolic blood pressure was 130.1 mmHg (median 130.0 mmHg) and diastolic pressure was 76.8 mmHg (median 80.0 mmHg). Mean heart rate was 79.8 beats per minute.

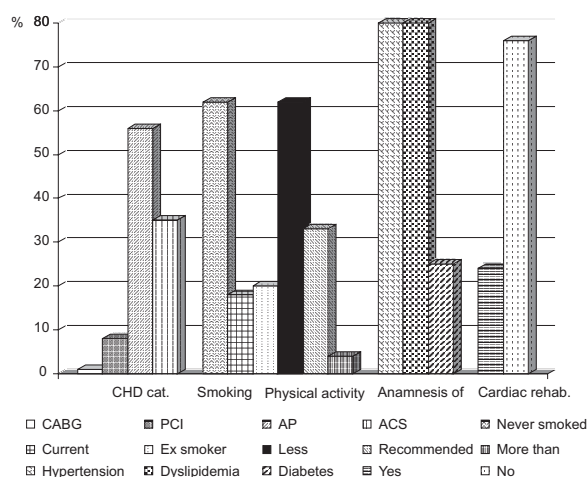


Fig. 1. Anamnestic data gained from questionnaire. CHD-Coronary heart disease; PCI-Percutaneous coronary intervention; CABG-Coronary artery bypass grafting; ACS-Acute coronary syndrome; AP-Angina pectoris.

Laboratory control (lipids, blood glucose) within one year to admission to hospital had 74% of patients. Mean total cholesterol values were 4.8 mmol/L (median 4.8); HDL-cholesterol 1.2 mmol/L (median 1.1); LDL-cholesterol 2.7 mmol/L (median 2.6); and triglycerides 1.9 mmol/L (median 1.5). Mean glucose in diabetic patients was 8.3 mmol/L (6.0 mmol/L for non-diabetics). Patients with diabetes were poorly regulated (mean HbA1c 8.2%) (Figure 2).

Blood pressure <140/90mmHg had 68% of patients and <130/80mmHg had 60%. Total cholesterol <4.5 mmol/L had 43%; <4.0 mmol/L 33%; LDL-cholesterol <2.5 mmol/L had 49%; <2.0 mmol/L had 32%; HDL-cholesterol >1.2 mmol/L (in women) or >1.0 mmol/L in men had 67% patients.

Mean body mass index was 28.3 kg/m<sup>2</sup>. 32% patients were obese and 72% were overweight. Less than recommended regular physical activity performed 62% of patients, and recommended physical activity performed only 33%. More than recommended performed 4%.

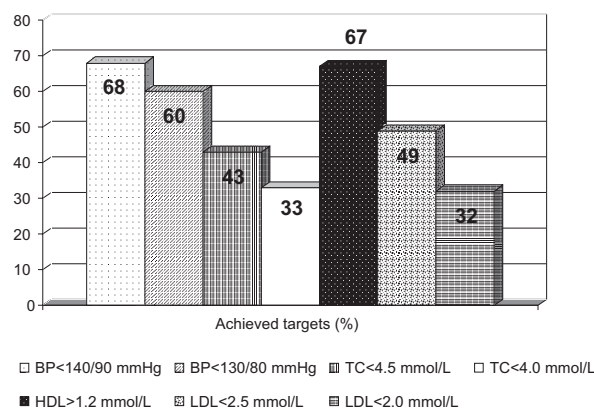


Fig. 2. The achieved targets in control of risk factors for CVD.

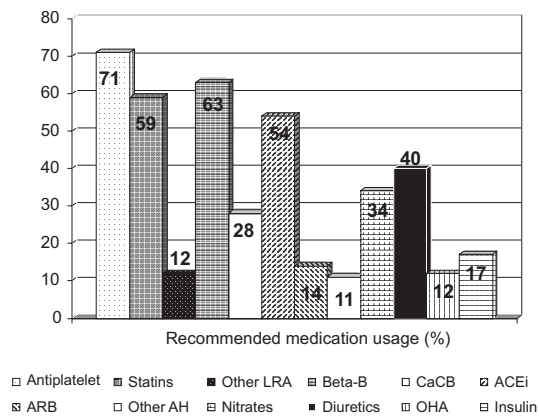


Fig. 3. Drug usage upon admission to hospital.

71% of patients used antiplatelet drugs, 59% used statins, 12% other lipid lowering agents, beta blockers 63%, calcium channel blockers 28%, ACE inhibitors 54%, angiotensin receptor blockers 14%, other hypertensives 11%, nitrates 34%, diuretics 40%, 12% were taking oral hypoglycemic agents and 17% of patients were on insulin therapy (Figure 3).

## Discussion

This Croatian pilot survey (CRO-SURF) showed a high prevalence of modifiable CHD risk factors in patients who are at very high risk of developing a new cardiovascular event. Patients with established CHD still use less prophylactic drugs than recommended. Therapeutic goals set by recent guidelines were not achieved by too many patients.

CRO-SURF had two goals. The first was to explore the practical side of a new questionnaire and whether it is applicable in everyday practice, and the second was to examine whether any positive or negative trend exists in CHD patients concerning CVD risk factors (dyslipidaemia, arterial hypertension, diabetes, smoking, usage of recommended drugs) when compared with the results of the last national survey named TASPIC-CRO that was performed almost a decade ago. Namely, TASPIC-CRO (Treatment and Secondary Prevention of Ischemic Coronary events in Croatia) was a Croatian national survey also performed with the aim to determine the status of major risk factors for coronary heart disease in patients with established CHD. TASPIC-CRO used methodology similar to EUROASPIRE study (6). TASPIC-CRO I was performed in 1998 and TASPIC-CRO V in 2002–2003.

Concerning the first goal, CRO-SURF showed that the usage of the new short questionnaire is efficient, is it not time consuming, does not demand any additional cost, clinicians or nurses can perform it upon admission to hospital or at any time during hospitalisation (it takes only about 60–90 seconds *per* patient to fill in the questionnaire) and it can be done by the bedside. Following positive experience from this national pilot survey a full survey on much more patients will be performed.

Concerning the second goal, CRO-SURF indicated that some of the negative trends still exist. For example, 65% Croatian patients with established CHD in TASPIC-CRO V had elevated total cholesterol and in CRO-SURF 57% of such patients were still not achieving target values. However, it has to be stressed that the target value was changed in the meantime from <5.0 mmol/L to <4.5 mmol/L. A positive trend is supported by the data showing that LDL-cholesterol below 2.0 mmol/L achieved only 68% patients in CRO-SURF while the same percentage of patients achieved <3.0 mmol/L LDL-cholesterol which was the target value when TASPIC-CRO V was performed. A very moderate positive trend was shown also concerning prevalence of HDL cholesterol. In TASPIC-CRO V 63% patients had recommended values, and in CRO-SURF 67% which, however, is not a significant change.

Smoking in Croatian CHD patients shows also a positive trend. In TASPIC-CRO V 34% patients were smokers, and in CRO-SURF only 18% were current smokers while 20% were ex-smokers.

A moderate positive trend was also recorded concerning the prevalence of diabetes (TASPIC-CRO 30% *vs.* CRO-SURF 25%), but the control of diabetes in these patients is still poor (mean HbA1c 8.2%).

The fact that only 24% of CHD patients attended cardiac rehabilitation is absolutely not satisfactory and should be urgently improved.

Some changes concerning the usage of recommended drug therapy have been noticed. Values that were compared are those that were recommended upon discharge from the hospital (TASPIC-CRO) and one noted upon admission to hospital (CRO-SURF). The trend of less using aspirin (TASPIC *vs.* SURF; 84% *vs.* 71%) can be seen. However, during TASPIC survey clopidogrel was still not fully reimbursed by the Croatian National Health Insurance Institute. This is probably the reason why today less aspirin is used. More than 70% patients were prescribed statins, but only 59% were still using it on admission in CRO-SURF. This is much better than only 28% on admission in TASPIC-CRO V. ACE inhibitors had the same trend (TASPIC *vs.* SURF; 52% *vs.* 54%). There is positive trend in usage of beta blockers and calcium antagonists (TASPIC-CRO V *vs.* CRO-SURF; 49% and 19% *vs.* 63% and 28% respectively). There is also an increasing trend in usage of diuretics which is hard to explain (TASPIC-CRO *vs.* CRO-SURF; 30% *vs.* 40%). Clearly there are more positive than negative trends but almost all observed values in CHD patients are still far away from those recommended<sup>8,10</sup>.

The fact that there were more than 70% of men among consecutive CHD patients might reflect not only higher incidence of CHD in males but also neglecting the signs and symptoms of CHD in women.

This pilot survey has its strengths and limitations. Among strengths the ease of administration should be mentioned as well as its cost effectiveness. The limitations include small number of patients for a survey, only



one center included which was chosen at the discretion of the investigators and therefore the representativeness of the results for the whole country is unknown. Laboratory measurements were not standardised but this should not be seen as a limitation since it is local results that are always used to trigger intervention in prevention.

According to the results of CRO-SURF as well as the results of EUROASPIRE III<sup>6</sup> and TASPIC-CRO<sup>9</sup>, it is clearly visible that secondary prevention of ischaemic coronary events in Croatia is not good enough and that established and well known CHD risk factors are still not

dealt with in appropriate way. This differs substantially from the perception which both, Croatian physicians and general public, have concerning this issue<sup>11,12</sup>.

The results from this pilot survey are alarming indicating that there is still much to do in secondary prevention in patients with established CHD in Croatia. Further surveys on much bigger patients samples are needed to confirm the conclusions of this survey but the results are worrying and they suggest that a great potential exists in reducing the risk of cardiovascular morbidity and mortality in Croatia.

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## CRO-SURF: HRVATSKI PILOT-PROJEKT ISPITIVANJA ČIMBENIKA RIZIKA U BOLESNIKA S KARDIOVASKULARNIM BOLESTIMA

### SAŽETAK

Ovaj je pilot projekt proveden kako bi se istražila prisutnost čimbenika rizika za kardiovaskularne bolesti u hrvatskih bolesnika s dijagnosticiranom koronarnom srčanom bolesti (KBS) koristeći novi upitnik. Cilj je bio isprobati ovaj novi i vrlo jednostavan za uporabu upitnik te dobivene rezultate iz ovog pilot projekta usporediti s rezultatima posljednjeg istraživanja na nacionalnoj razini (TASPIC-CRO V), a sve s ciljem dobivanja informacije da li se sekundarna prevencija poboljšala u razdoblju od 2003. do 2010. Ukupno 122 ispitanika s definiranom KBS uključeno je u ovaj pilot-projekt (88 muškaraca, 34 žena, srednje dobi 66,3 godina) liječenih pri Kliničkom bolničkom centru Zagreb-Rebro, Zagreb, Hrvatska. Podaci su bazirani na ispunjavanju SURF upitnika odmah nakon kliničkog pregleda. 122 bolesnika

hospitalizirano je zbog CABG (1%), PCI (8%), ACS (35%) ili kronične stabilne angine (56%). Anamnezu arterijske hipertenzije imalo je 95% ispitanika (ali prilikom primitka u bolnicu srednji sistolički arterijski tlak bio je 130,1 mmHg, dijastolički 76,8 mmHg), 90% ispitanika imalo je dislipidemiju (ukupni kolesterol <4,5 mmol/L imalo je 43%; <4,0 mmol/L 33%; LDL-kolesterol <2,5 mmol/L 49%; <2,0 mmol/L 32%; HDL>1.2 mmol/L (žene) ili >1.0 mmol/L (muškarci) imalo je 67%), 25% šećernu bolest koja je bila loše regulirana (srednji HbA1c 8,2%), 18% je bilo aktivnih pušača. Po otpustu iz bolnice samo 24% ispitanika provelo je propisanu kardiološku rehabilitaciju. Srednja vrijednost indeksa tjelesne mase bila je 28,3 kg/m<sup>2</sup> (32% pretilo, 72% prekomjerno teško). U usporedbi s TASPIC-CRO V prati se trend manje uporabe acetil-salicilne kiseline. Ovaj trend prati se i vezano uz terapiju statinima. Više bolesnika uzima beta blokatore, antagoniste kalcijevih kanala i diuretika nego što je to bio slučaj prije 7 godina. Ovaj pilot-projekt s kratkim CRO-SURF upitnikom pokazuje kako je kratak, koristan i lak za uporabu u svakodnevnoj kliničkoj praksi. Pokazuje se kao dobar i isplativ alat za sakupljanje podataka vezanih uz čimbenike rizika za kardiovaskularne bolesti. Rezultati proizašli iz njega ukazuju na još uvijek visoku prevalenciju promjenjivih čimbenika rizika u hrvatskih bolesnika s KBS.