

Ten-year risk of fatal cardiovascular disease in the Polish population and medical care. Results of the WOBASZ study

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Abstract

Background: An individual assessment of global risk of death from cardiovascular diseases (CVD) should guide management, both life style changes and medical therapy, in order to decrease risk factors and improve prognosis.

Aim: We assessed global risk in the Polish population and its relation to medical care, including blood pressure and cholesterol measurements, smoking cessation and dietary advice, and recommendations regarding increased physical activity.

Methods: A sample of the Polish population including 6392 men and 7153 women aged 20–74 years was screened in 2003–2005. We calculated global risk for subjects aged 40–70 years using the SCORE function for high-risk regions of Europe.

Results: We found high global risk ($\geq 5\%$) in 46% of men and 21% of women. Compared to low risk subjects, high risk subjects more often had hypercholesterolaemia, hypertension or were obese, and they more often visited their primary care physicians. Dietary advice was given to 36% of high global risk men compared to only 20% of low global risk men with hypercholesterolaemia (47% vs 23% among women, respectively $p < 0.0001$), and cholesterol measurement was made in 31% of high global risk men and 19% of low global risk men with hypercholesterolaemia (38% vs 27% among women, respectively $p < 0.0001$). Smokers with high global risk received smoking cessation advice significantly more often than low global risk smokers (men: 72% vs 55%; women: 63% vs 52%). Subjects with hypertension and high global risk had their blood pressure measured significantly more often than those with hypertension and low global risk (men: 83% vs 68%; women: 87% vs 79%). High-risk obese persons significantly more often received both dietary advice (men: 55% vs 36%; women: 60% vs 34%) and recommendations regarding higher physical activity (men: 43% vs 32%; women: 40% vs 27%). In the logistic regression analysis, the quality of medical care was significantly associated with the global risk.

Conclusions: The Polish population is characterised by a high proportion of subjects with high global risk especially among men. The quality of medical care was found to be associated with the global risk level: the higher was the global risk, the better was the medical care, although it is still insufficient compared to current standards.

Key words: global risk, medical care, health survey

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INTRODUCTION

Cardiovascular diseases (CVD) are the major cause of premature mortality and an important cause of disability. The INTERHEART study showed that 9 modifiable risk factors (including cigarette smoking, hypertension, poor nutrition, high waist-to-hip ratio, low physical activity, and psychosocial factors) are responsible for 90% of the myocardial infarction risk [1]. As noted in the CVD prevention guidelines, clinicians of

all specialties should pay special attention to promotion of healthy lifestyle changes and early identification of subjects with high CV risk [2, 3].

The WOBASZ study (Wieloośrodkowe Ogólnopolskie Badanie Stanu Zdrowia Ludności Polski) showed that about 64% of men and 75% of women aged 20–74 years, including more than 50% of young people (aged 20–34 years) sought medical advice at least once during the 12 months before the

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study [4]. The fact that more than two thirds of population (and in particular more than half of young people) seek medical advice at least once a year, and most people believe that physicians are the most reliable source of health information and declare adherence to physician recommendations, makes clinicians an important “first line” of both primary and secondary prevention.

The aim of this study was to evaluate 10-year fatal CVD risk in the Polish population and assess whether the quality of medical care is determined by the global risk.

METHODS

Study group

We studied a representative random sample of the Polish population aged 20–74 years. In 2003–2005, 6392 men and 7153 women were examined in the WOBASZ study. Evaluation included a questionnaire, physical examination, anthropometric measurements and laboratory testing. The goals and methods of the WOBASZ study were described previously [5, 6].

Evaluation of 10-year global risk

Individual 10-year risk of cardiovascular death, later referred to as the “global risk”, was calculated for healthy subjects aged 40–70 years (with no history of CVD or diabetes) using the Systematic Coronary Risk Evaluation (SCORE) function for high-risk regions of Europe [7] and two groups were identified, with low (< 5%) and high (\geq 5%) global risk. In addition, the high global risk group included all subjects with a history of coronary artery disease, diabetes, previous stroke, peripheral vascular disease, and persons with total cholesterol of \geq 8.0 mmol/L, LDL cholesterol of \geq 6.0 mmol/L or systolic blood pressure of \geq 180/110 mm Hg, regardless of the calculated global risk.

Evaluation of medical care

The quality of medical care was evaluated based on the response to a questionnaire item: “During a visit to a primary care physician/internist, do you usually:

- have your blood pressure measured?
- receive an advice regarding smoking cessation?
- receive nutritional advice?
- receive an advice to increase physical activity?
- did you have blood cholesterol level measured within the last 12 months?”

For the purpose of present analysis, we defined subsets of subjects with hypertension, dyslipidaemia, and obesity.

Hypertension was defined as the mean of the second and third blood pressure measurements \geq 140/90 mm Hg and/or antihypertensive drug use. Hyperlipidaemia was defined as total cholesterol \geq 5.0 mmol/L, LDL cholesterol \geq 3.0 mmol/L, triglycerides \geq 1.7 mmol/L and/or lipid-lowering drug use. Obesity was defined as body mass index

\geq 30 kg/m². In addition, regular smokers were defined as subjects who smoked at least one cigarette per day.

Statistical analysis

All analyses were performed separately for men and women. The χ^2 test was used to evaluate differences in medical care in global risk groups (comparison of rates of specific components of medical care in various groups). Uni- and multivariate stepwise logistic regression model was used to evaluate associations between the global risk and medical care. A *p* value < 0.05 was considered significant.

RESULTS

Overall, high global risk was found in 46% of men and 21% of women. The highest proportions of men with high global risk were noted in West Pomeranian (51.6%), Lubusz (49.3%), and Pomeranian voivodeships (47.7%), and the lowest in Lower Silesian voivodeship (39.9%). Among women, the highest proportion of subjects with high global risk were noted in Silesian and Greater Poland voivodeships (30% each), and the lowest in Subcarpathian voivodeship (23.0%).

As expected, CVD risk factors were significantly more common in subjects with high global risk. Men with high global risk had hypercholesterolaemia, hypertension, and obesity more often compared to men with low global risk. Similar differences were noted in women, with hypercholesterolaemia, hypertension, and obesity more frequent among women with high global risk. Both men and women with high global risk significantly more frequently sought specialist medical advice within the last 12 months (Table 1).

At least one of the evaluated medical care component (lifestyle modification advice, measurement of total cholesterol level at least once in the last year, and blood pressure measurement during the clinic visit) was confirmed by 75% of men and 77% of women. No significant differences were seen in regard to the type of out-patient clinic (public primary care clinic: men 76%, women 77%; public specialist clinics: men 78%, women 76%; private specialist clinics: men 73%, women 70%). Of note, 25% of the study subjects did not receive any lifestyle modification advice, had their total cholesterol level measured nor had their blood pressure measured during the office visit.

In our study, we found that high global risk was associated with better quality of medical care, as subjects with high global risk were more likely than subjects with low global risk to receive lifestyle modification advice, have their blood pressure measured during the clinic visit, and have their cholesterol level measured at least once in the last year. At the same time, however, 15% of men and 12% of women with high global risk did not receive any care. Of particular note is the small proportion of study subjects (regardless of the global risk) who had their cholesterol level measured, received nutritional advice or receive an advice to increase physical activity (Table 2).

Table 1. Characteristics of high and low global risk (GR) population in regard to the presence of major cardiovascular disease risk factors and the frequency of seeking medical advice

	Men			Women		
	GR ≥ 5%	GR < 5%	P	GR ≥ 5%	GR < 5%	P
Hypercholesterolaemia	76%	70%	< 0.0001	80%	71%	< 0.0001
Hypertension	68%	34%	< 0.0001	74%	33%	< 0.0001
Cigarette smoking	40%	38%	NS	18%	27%	< 0.0001
Obesity	31%	20%	< 0.0001	44%	24%	< 0.0001
Physician visit*	77%	60%	< 0.0001	87%	74%	< 0.0001

*During the last 12 months

Table 2. Medical care in different global risk (GR) groups

Components of care	Men			Women		
	GR ≥ 5%	GR < 5%	P	GR ≥ 5%	GR < 5%	P
Medical care overall (at least 1 of the following)	85%	67%	< 0.0001	88%	72%	< 0.0001
Blood pressure measurement*	79%	60%	< 0.0001	83%	65%	< 0.0001
Smoking cessation advice*	72%	55%	< 0.0001	63%	52%	< 0.0001
Dietary advice*	38%	20%	< 0.0001	48%	22%	< 0.0001
Advice to increase physical activity*	27%	15%	< 0.0001	27%	14%	< 0.0001
Cholesterol level measurement**	33%	19%	< 0.0001	40%	25%	< 0.0001

*During an office visit; **during the last 12 months

When we analysed medical care in subsets with particular CVD risk factors, taking into account the global risk in these subjects, we found that both men and women with hypercholesterolaemia and high global risk were significantly more likely to receive nutritional advice and have their cholesterol level measured at least once in the last year compared to subjects with hypercholesterolaemia and low global risk.

Cigarette smokers with high global risk received advice regarding smoking cessation more often than cigarette smokers with low global risk.

Subjects with hypertension and high global risk had their blood pressure measured during the clinic visit more often than subjects with hypertension and low global risk (Table 3).

Obese subjects with high global risk were significantly more likely to receive nutritional advice and an advice to increase physical activity (Table 3).

Logistic regression analysis showed an association between the global risk and the quality of medical care (defined as the sum of particular components of care). The better is the medical care, the more likely is given person to have high global risk [men: $OR_{GlobalRisk \geq 5\%} = 1.46$ (CI: 1.36–1.56); women: $OR_{GlobalRisk \geq 5\%} = 1.51$ (CI: 1.38–1.65)] (data not shown in the table). Among evaluated components of medical care, the strongest association with high global risk was shown in

men, in order of decreasing magnitude, for blood pressure measurement, nutritional advice, physician visit, smoking cessation advice, and cholesterol level measurement, and in women for nutritional advice, blood pressure measurement, and cholesterol level measurement (Table 4).

DISCUSSION

Patient management is based on guidelines developed by medical societies based on available research evidence. According to these recommendations, management should be determined by an assessment of the global risk of an individual and not any single risk factors. For this purpose, SCORE classification system was developed, among others, to determine individual 10-year fatal CVD risk based on gender, age, systolic blood pressure, total cholesterol level, and smoking status. The threshold for high cardiovascular risk has been set at 5%. This level of risk identifies subjects at high risk of dying due to cardiovascular causes [2]. Persons with high global risk as determined using the SCORE risk scale, including subjects with a history of coronary artery disease, diabetes or previous stroke, should be a priority target population for physicians. Identification of high global risk should lead to intensification of physician advice regarding risk reduction through lifestyle modification and appropriate pharmacotherapy.

Table 3. Medical care in the study subjects with specific cardiovascular disease risk factors depending on the global risk (GR)

	Men			Women		
	GR ≥ 5%	GR < 5%	P	GR ≥ 5%	GR < 5%	P
Subjects with hypercholesterolaemia: dietary advice	36%	20%	0.0001	47%	23%	0.0001
Subjects with hypercholesterolaemia: cholesterol level measurement	31%	19%	< 0.0001	38%	27%	< 0.0001
Smokers: smoking cessation advice	72%	55%	< 0.0001	63%	52%	< 0.0001
Subjects with hypertension: blood pressure measurement	83%	68%	< 0.0001	87%	79%	< 0.0001
Obese subjects: dietary advice	55%	36%	< 0.0001	60%	34%	< 0.0001
Obese subjects: advice to increase physical activity	43%	32%	< 0.0001	40%	27%	< 0.0001

Table 4. Association of the evaluated components of care with the global risk (stepwise logistic regression model)

Components of care	Men			Women		
	OR _{GR≥5%} (95% CI)	Variable order	P	OR _{GR≥5%} (95% CI)	Variable order	P
Blood pressure measurement	1.53 (1.25–1.87)	1	< 0.0001	2.58 (1.96–3.40)	2	< 0.0001
Dietary advice	1.78 (1.46–2.17)	2	< 0.0001	1.67 (1.21–2.21)	1	< 0.0001
Physician visit	1.41 (1.16–1.71)	3	< 0.0001	–	–	NS
Smoking cessation advice	1.63 (1.29–2.05)	4	< 0.0001	–	–	NS
Cholesterol level measurement	1.63 (1.25–2.21)	5	< 0.05	1.66 (1.25–2.21)	3	< 0.0001

OR_{GR≥5%} — odds ratio of high (≥ 5%) global risk; CI — confidence interval

The WOBASZ revealed the presence of a high proportion of subjects with a high 10-year fatal CVD risk in the Polish population, particularly in men (50%). In addition, we found a relationship between medical care in regard to preventive recommendations given by physicians in clinics and the global risk in individual patients. The higher was the risk, the better was the quality of medical care. Due to a high proportion of subjects at high 10-year risk in the Polish population, intensive efforts to reduce this risk are necessary. Primary care physicians and specialists are an important element in CVD prevention efforts, as they see approximately two thirds of the adult population each year (these data are similar to U.S. data, with 80% of the population seeking medical advice at least once a year [8]).

We found that not all patients had their blood pressure measured during an office visit. Blood pressure measurements were performed in about 80% of subjects with high global risk and about 60% of subjects with low global risk.

Health education should be an important part of medical care, and thus advice on CVD prevention should be given during each office visit. Such an approach was also recommended by the United States Preventive Services Task Force

(1989 and 1996). Studies performed in 1990–1998 showed, however, that such preventive advice is given during only 20% to 60% of office visits [9, 10]. In our study, at least one analysed component of medical care was confirmed by 75% of men and 77% of women, with no significant differences between the types of office setting (public or private healthcare). However, subjects at high global risk were more likely than subjects at low global risk (more than 80% vs approximately 70%) to receive lifestyle modification advice or have their cholesterol level or blood pressure measured. Of note, 25% of the study subjects (including 15% of men and 12% of women with high global risk) did not have their cholesterol level measured during the last year nor had their blood pressure measured during a clinic visit, and also did not receive any preventive advice from their physicians.

A survey performed among U.S. physicians regarding their views on their role and main barriers in primary prevention showed that for these physicians, primary prevention is not a priority due to rapid effects of secondary prevention. Some physicians believe that talking about prevention is not a major task in their work and would not be an effective way to use limited time that should be mainly devoted to diagnosis

and treatment. They also believe that preventive efforts may be a responsibility of other healthcare personnel such as nurses and dietitians [11].

Appropriate nutrition should be an integral part of management of subjects at high CVD risk. All patients with established CVD and subjects at high risk of fatal CVD should receive professional advice regarding nutrition [3]. In our study, only 36% of men and 47% of women with high global risk reported receiving nutritional advice, and this proportion rose to 55% among obese men with high global risk and 60% among obese women with high global risk.

Promotion of an active lifestyle is another element of preventive efforts. Physical activity plays a major role in prevention of CVD and other chronic diseases such as diabetes, osteoarthritis or depression but is often not recommended in everyday clinical practice. In our study, advice to increase physical activity was given to a low proportion of subjects ranging from 14% in the low global risk group to 27% in the high global risk group, more often among men than women. Obese subjects were nearly twice as likely to receive an advice to increase physical activity (ranging from 27 among obese low global risk subjects to 43% among obese high global risk subjects). In an American study, direct observation showed that advice regarding physical activity was given during 22.3% of clinic visit, but the surveyed patients confirmed such conversation in only 13% of cases [12]. Similarly to our study, recommendations regarding physical activity were more often given to men and high risk patients (with risk factors or chronic disease) [12]. In another American survey among family physicians and specialists, a higher proportion of patients (ranging from 29% to 59%) confirmed being given some advice regarding physical activity [13]. According to American physicians, the major obstacles to more frequent advice in this regard included lack of time, perceived ineffectiveness in terms of changing patient behaviours, lack of patient interest, and lack of knowledge to recommend specific forms of exercise.

Both U.S. studies [14] and the WOBASZ study suggest that about 70% of smokers see a primary care physician at least once a year. Thus, primary care clinic seem to be an ideal place for a smoking cessation intervention. In an American survey among more than 3000 physicians, nurses and physician assistants, 69% of doctors reported that they always or nearly always recommend smoking cessation to their patients [15]. In our study, the proportion of physicians giving advice to stop smoking was lower, in part likely due to methodological differences between the two studies, with U.S. physicians overestimating, and the WOBASZ study patients underestimating the proportion of patients being given such advice.

CONCLUSIONS

The WOBASZ study showed a high proportion of subjects with high 10-year fatal CVD risk in the Polish population,

especially among men. The quality of medical care was found to be associated with the global risk level: the higher was global risk, the better was the medical care, although it is still insufficient compared to current standards.

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Dziesięcioletnie ryzyko zgonu sercowo-naczyniowego w populacji polskiej a opieka medyczna. Wyniki badania WOBASZ

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Streszczenie

Wstęp: Ocena indywidualnego ryzyka globalnego (RG) zgonu sercowo-naczyniowego pacjenta powinna stanowić podstawę postępowania medycznego, zarówno w zakresie zmiany stylu życia, jak i ewentualnej farmakoterapii w celu obniżenia natężenia czynników ryzyka i w konsekwencji poprawy rokowania pacjenta.

Cel: Celem pracy była ocena RG populacji polskiej i analiza związku RG z wybranymi elementami opieki medycznej.

Metody: Reprezentatywną próbę populacji polskiej [13 545 osób (6392 mężczyzn i 7153 kobiet), w wieku 20–74 lata] zbadano w latach 2003–2005 w ramach Wieloośrodkowego Ogólnopolskiego Badania Stanu Zdrowia Ludności (WOBASZ). Indywidualne RG obliczono dla populacji osób w wieku 40–70 lat, przy użyciu funkcji score dla regionów Europy o wysokim ryzyku. Opiekę medyczną oceniono na podstawie badania ankietowego dotyczącego porad udzielanych przez lekarzy w zakresie diety, zwiększenia aktywności fizycznej, rzucenia palenia tytoniu, a także pomiaru ciśnienia tętniczego w trakcie wizyty i pomiaru stężenia cholesterolu w czasie ostatniego roku.

Wyniki: Spośród zbadanych osób 46% mężczyzn i 21% kobiet charakteryzowało się wysokim RG ($\geq 5\%$). U pacjentów z wysokim RG częściej niż z niskim RG obserwowano hipercholesterolemię, nadciśnienie tętnicze lub otyłość; ponadto osoby te częściej korzystały z opieki medycznej. Analizując dane chorych z hipercholesterolemią, stwierdzono częstsze udzielanie porady dietetycznej mężczyznom (M) z wysokim RG (36%) w porównaniu z mężczyznami z niskim RG (20%) [u kobiet (K) odpowiednio 47% i 23%; $p < 0.0001$]. Ponadto u większego odsetka osób z hipercholesterolemią i wysokim RG wykonano pomiar cholesterolu w czasie ostatnich 12 miesięcy (M: 31% v. 19%; K: 38% v. 27%; $p < 0.0001$). Osoby palące tytoń, które dodatkowo były w grupie wysokiego RG, otrzymywały poradę dotyczącą rzucenia palenia istotnie częściej niż palące z grupy niskiego RG (M: 72% v. 55%; K: 63% v. 52%). Podobnie u pacjentów z nadciśnieniem tętniczym i wysokim RG częściej w czasie wizyty lekarskiej mierzono ciśnienie w porównaniu z osobami z nadciśnieniem i niskim RG (M: 83% v. 68%; K: 87% v. 79%). Osoby otyłe z wysokim RG częściej otrzymywały zarówno zalecenia dietetyczne (M: 55% v. 36%; K: 60% v. 34%), jak i zalecenia dotyczące zwiększenia aktywności fizycznej (M: 43% v. 32%; K: 40% v. 27%). W analizie regresji logistycznej opieka medyczna okazała się istotnie związana z wielkością RG.

Wnioski: Populacja polska charakteryzuje się dużym odsetkiem osób z wysokim ryzykiem zgonu sercowo-naczyniowego, zwłaszcza wśród mężczyzn. Opieka medyczna wiąże się z wielkością ryzyka zgonu sercowo-naczyniowego. Im wyższe jest to ryzyko, tym lepsza opieka medyczna, niemniej w obu analizowanych grupach nie jest ona wystarczająco dobra.

Słowa kluczowe: ryzyko globalne, opieka medyczna, badanie przekrojowe

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