

Knowledge and attitudes towards hypertension and hypercholesterolemia in a population of Southern Germany: Results from a population survey in the Augsburg area

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Health promotion and preventive actions against risk factors of cardiovascular diseases in the community are the main objective of the population approach to reduce cardiovascular morbidity and mortality¹. For some years, the population in the Federal Republic of Germany (FRG) has been advised to control blood pressure and stop tobacco smoking². The third major risk factor, high blood cholesterol, did not receive comparable public attention. However, following the results of the Lipid Research Clinics – Coronary Primary Prevention Trial (LRC-CPPT) in 1984³ and the Helsinki Heart Study in 1988⁴, public education efforts focusing on the beneficial effect of lowering high blood cholesterol have been intensified⁵⁻⁶.

The objective of this survey was to assess the knowledge and attitudes of the FRG population towards hypertension and hypercholesterolemia. It is assumed that the control of risk factors in the community can be improved, if deficiencies and weaknesses in the population's knowledge and attitudes can be identified and addressed by targeted information⁷.

Methods

The study was carried out in Augsburg and two surrounding counties from November 2, 1989 to December 28, 1989. The study area encompasses about half a million people in Southern Germany. A representative random sample of 2000 inhabitants of German nationality, aged 25 to 74 years, and residents of the area was drawn from the municipal registration office. The anonymous questionnaire with 21 closed-ended and 4 open-ended questions concerning knowledge and attitudes towards hypertension and hypercholesterolemia as risk factors for cardiovascular diseases was sent to all sampled persons. Nonrespondents were reminded by a maximum of four additional mailings. A response rate of 67% (n=1323) was obtained. No major differences in response occurred by sex, age and place of residence (e.g. 63.9% for 25-34 year old men and 62.9% for 65-74 year old women). The data set was analysed using 1323, the number of all returned questionnaires, as the denominator and stratified by sex, age, place of residence, and socioeconomic status. The latter was estimated by level of highest attained educational degree. Missing values were interpreted as not knowing the right answer.

Results

Knowledge about hypertension and hypercholesterolemia

The knowledge about determinants of hypertension or hypercholesterolemia was considerably high (Table 1). Eighty seven percent of the respondents knew that obesity is associated with hypertension; 74% meant that obesity leads to hypercholesterolemia. Less people could tell the association between physical inactivity, heredity and alcohol consumption with hypertension or hypercholesterolemia. In general, people seemed to be less knowledgeable about factors leading to hypercholesterolemia than about determinants of hypertension. The results in Table 1 as well as in Table 2, however, should be interpreted with caution because the participants answered closed-ended multiple choice questions. Encouraging is the fact that 94% knew about an association between poor nutrition and hypercholesterolemia.

Tab. 1. Knowledge about determinants of hypertension and hypercholesterolemia in percent of respondents. Population survey Augsburg, 1989 (n = 1323).

	Hypertension %	Hypercholesterolemia %
Obesity	87	74
Dietary factors	76	94
Alcohol consumption	75	60
Physical inactivity	58	43
Heredity	48	35

Stroke, heart attack and heart failure were better recognized as complications of hypertension than as sequelae of hypercholesterolemia (Table 2). Ninety four percent of the population knew that hypertension might cause stroke and heart attack. Seventy two percent and 80% respectively indicated the same

Tab. 2. Knowledge about complications of hypertension and hypercholesterolemia in percent of respondents. Population survey Augsburg, 1989 (n = 1323).

	Hypertension %	Hypercholesterolemia %
Stroke	94	72
Heart attack	94	80
Heart failure	69	57
Occlusive peripheral Artery disease	57	71

for hypercholesterolemia. Seventy one percent of the respondents had heard about the association between hypercholesterolemia and peripheral artery disease.

Table 3 illustrates that the discrepancy in knowledge about the two risk factors became more obvious when people were asked about their personal values. Ninety eight percent of the population reported that their blood pressure had been checked at least once, and 58% claimed to know their own blood pressure value. Only 58% of the respondents, however, could remember ever having had their blood cholesterol measured, and merely 14% meant to know their personal blood cholesterol value.

Tab. 3. Knowledge about personal blood pressure and blood cholesterol value in percent of respondents. Population survey Augsburg, 1989 (n = 1323).

	Blood pressure %	Blood cholesterol %
Value has been checked	98	59
Value has been told	93	52
Value is known	58	14

Disparities in knowledge about the recommended definitions^{5,8} of hypertension and hypercholesterolemia are shown in Table 4. Thirty five percent of the respondents indicated a blood pressure value below or equal to the recommended systolic cutpoint (160 mmHg) for hypertension. A diastolic blood pressure value below or equal to the recommended diastolic cutpoint (95 mmHg) for hypertension was reported by 24% of the participants. Merely 18% of the respondents indicated 250 mg/dl to be the threshold value for hypercholesterolemia, not to mention the 10% who reported a threshold value of 200 mg/dl.

Tab. 4. Knowledge concerning the definition of hypertension and hypercholesterolemia in percent of respondents. Population survey Augsburg, 1989 (n = 1323).

	%	Cumulative %
Hypertension (mm Hg)		
systolic ≥ 140	15	15
systolic ≥ 160	20	35
diastolic ≥ 90	21	21
diastolic ≥ 95	3	24
Hypercholesterolemia (mg/dl)		
≥ 200	10	10
≥ 250	8	18

Attitudes towards preventive actions concerning risk factors

Sixty-two percent of the population thought that smoking cessation would have a large effect in preventing heart disease (Table 5). Fifty four percent

indicated a large effect for lowering high blood pressure and 48% thought similarly about reducing overweight. The belief in the effect of lowering high blood cholesterol was comparably weak. Just 43% thought that this might have a large effect in preventing heart disease. Stratification by socio-demographic characteristics revealed only minor differences concerning this attitude. There was, however, a trend indicating that women, people aged less than 50 years, urban residents and people with high education had a stronger belief in the effectiveness of lowering high blood pressure and high blood cholesterol. A comparison with US data⁹ shows that the belief in a beneficial effect of reducing risk factors to prevent heart disease is much stronger in the US. Although the US data show the same pattern, all values lie between 20% and 30% higher than the respective figures for the Augsburg study area.

Tab. 5. Proportion of people who think that the following actions have a large effect on preventing heart disease.

	FRG (1989)* %	USA (1986)** %
Stop smoking	62	85
Lower high blood pressure	54	84
Reduce overweight	48	77
Lower high blood cholesterol	43	72

* Source: Population survey Augsburg, 1989 (n = 1323)

** Source: JAMA 1987; 258:3527-31

Preventive action

The limited trust in preventive actions is reflected in the measures people were taking. Sixty percent of all respondents claimed to take some kind of action to prevent their blood pressure and blood cholesterol from rising. Table 6 illustrates that 43% claimed to control their weight, 41% indicated to eat less fat, and 35% claimed to eat more fresh fruits and vegetables. Twenty-eight percent reported physical exercise, 22% to reduce their alcohol intake, and 9% to stop smoking.

Tab. 6. Actions people take to lower or prevent high blood pressure and high blood cholesterol in percent of respondents. Population survey Augsburg, 1989 (n = 1323).

	Hypertension %	Hypercholesterolemia %
Eat less fat	28	41
Control weight	43	31
Eat more fresh fruits and vegetables	33	35
Physical exercise	28	11
Eat more high fiber food	23	30
Reduce alcohol intake	22	15
Stop smoking	9	5

Discussion

People's knowledge of determinants and complications of hypertension and hypercholesterolemia was considerably high. The respondents, however, were asked closed-ended questions, allowing them to choose from a list of given answers. Furthermore, the Augsburg area is locale of the WHO-MONICA (Monitoring trends and determinants in cardiovascular disease) project^{10,11} and might not be representative for the entire country.

The relevance of obesity seemed to be known fairly well. It is surprising that 75% seemed to know the recently scientifically accepted association between alcohol consumption and hypertension^{12,13}. This finding probably reflects people's intuition rather than knowledge. Encouraging is the fact that 94% indicated the association between diet and hypercholesterolemia. Knowledge about practical facts, however, which allows to make meaningful dietary changes was less solid. Ninety four percent suggested to eat less fat, 82% to eat less sausage, 75% to consume skimmed milk, and only 41% to eat less cheese.

People knew more about hypertension than about hypercholesterolemia. This discrepancy became very obvious when they were asked about their personal values and the definitions of hypertension and hypercholesterolemia. Merely 14% knew their personal blood cholesterol value. Although this number is unacceptably low, it is still higher than the 7% reported from the US survey in 1986⁹. The low proportion of people knowing their own blood pressure or blood cholesterol value will have to be addressed by new educational efforts encouraging people to have their blood pressure and blood cholesterol checked and to «know their personal values». Information on the correct cut-points should be part of this campaign.

Citizens of the FRG have less trust in preventive actions than US citizens⁹. This is surprising, because the knowledge of risk factors and preventive actions seems to be better in the FRG. Although the US data stem from a national telephone survey, it is not likely that this large difference can be entirely explained by methodological differences. This discrepancy should be seen as a challenge for further preventive activities.

People in both countries considered a reduction of blood cholesterol less effective than lowering blood pressure or cease smoking. Only 42% of the public attributed a large effect to lowering blood cholesterol. This pattern underscores the special need for improved public education about hypercholesterolemia. The limited trust in preventive actions is reflected in people's behavior. Only 60% of the respondents claimed to take some kind of actions to prevent or reduce high blood pressure and high blood cholesterol. These actions reflect some knowledge of recommendations – e.g. 43% control their weight to prevent high blood pressure, 41% eat less fat to prevent high blood cholesterol – but are still far from satisfactory.

Furthermore, the real behavior is unlikely to be better than the reported.

The results of this survey clearly demonstrate insufficiencies in knowledge and attitudes of the population of this region. Knowledge and attitudes of people in the entire FRG are likely to be worse, because the study area is one of the 39 centers of the WHO-MONICA project. Stratified analyses by sociodemographic characteristics revealed no major differences in knowledge and attitudes. There was, however, a tendency for women, younger people, urban residents, and people with higher education to be better informed. Future educational efforts should emphasize specifically the importance of knowing one's own blood pressure and blood cholesterol values. Furthermore, public knowledge about the risks associated with elevated blood cholesterol and how to prevent them should be improved. The three most often reported sources of information about risk factors, television (61%), physicians (58%), and journals (55%) will have to be used effectively for this purpose. Repeated nationwide surveys within intervals of 3 to 5 years will be necessary to evaluate whether the desired effect has been achieved.

Summary

The survey was conducted to assess knowledge and attitudes of a population in Southern Germany towards hypertension and hypercholesterolemia. A questionnaire, mailed to a random sample of 2000 citizens of the Augsburg area between 25 and 74 years of age, was responded by 67%. Knowledge about determinants and complications of hypertension or hypercholesterolemia was considerably high. Major deficiencies were found in knowledge about personal values and recommended definitions of the two risk factors. Fifty eight percent claimed to know their personal blood pressure value, but merely 14% reported to know their personal blood cholesterol value. Just 21% were able to give the correct definition of hypertension and 10% defined hypercholesterolemia correctly. People had more trust in the effect of lowering high blood pressure (54%) to prevent heart disease than in the effect of lowering high blood cholesterol (43%). Sixty percent claimed to take some kind of actions to control their blood pressure and blood cholesterol.

Résumé

Connaissances et attitudes de la population générale concernant l'hypertension et l'hypercholestérolémie: Résultats d'une enquête de population de la région d'Augsburg

Une enquête de population a été conduite pour évaluer les connaissances et les attitudes de la population générale de l'Allemagne du Sud concernant l'hypertension et l'hypercholestérolémie. Un questionnaire écrit a été adressé à un échantillon aléatoire de 2000

citoyens de la région d'Augsburg, âgés de 25 à 74 ans. Le taux de réponse était de 67%. Les connaissances concernant les déterminants et les complications de l'hypertension ou de l'hypercholestérolémie étaient très bonnes. Les déficiences majeures concernaient les connaissances des valeurs personnelles de cholestérolémie et la connaissance des seuils critiques pour les deux facteurs de risque. 58% des personnes interrogées connaissaient leur valeur de pression artérielle, mais à peine 14% connaissaient leur cholestérolémie. 21% pouvaient donner une définition correcte de l'hypertension, 10% celle de l'hypercholestérolémie. Les personnes interrogées pensaient que l'abaissement de la pression artérielle était plus efficace pour la prévention des maladies cardio-vasculaires que l'abaissement du cholestérol sanguin (54% contre 43%, respectivement). 60% affirmaient entreprendre quelque chose pour contrôler leur tension artérielle et leur cholestérol sanguin.

Zusammenfassung

Wissen und Einstellung der Bevölkerung zu den Risikofaktoren Hypertonie und Hypercholesterinämie: Ergebnisse einer Bevölkerungsbefragung in der Region Augsburg

Die Bevölkerung der Stadt Augsburg und zweier angrenzender Landkreise wurde nach ihrem Wissen und ihrer Einstellung zu den Risikofaktoren Hypertonie und Hypercholesterinämie befragt. Der zugesandte Fragebogen wurde von 67% einer 2000 Personen im Alter von 25 bis 74 Jahren umfassenden repräsentativen Stichprobe beantwortet. Das Wissen der Bevölkerung über Determinanten und Komplikationen von Hypertonie und Hypercholesterinämie war gut. Unbefriedigend dagegen war das Wissen über die persönlichen Werte und die empfohlenen Grenzwerte. Während immerhin 58% der Befragten angaben, den eigenen Blutdruck zu kennen, waren nur noch 14% in der Lage, den eigenen Cholesterinwert zu nennen. Einundzwanzig Prozent der Bevölkerung kannten die korrekten Grenzwerte für die Hypertonie. Nur 10% konnten die Grenzwerte für die Hypercholesterinämie richtig nennen. Um der Entstehung einer Herzerkrankung vorzubeugen, vertraute die Bevölkerung stärker auf die Senkung eines erhöhten Blutdruckes als auf eine Senkung erhöhter Cholesterinwerte. Sechzig Prozent der Befragten gaben an, etwas für gute Blutdruck- und Cholesterinwerte zu unternehmen.

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