

¹ Department of General Practice and Health Service Research, University of Heidelberg

² Department of Clinical Social Medicine, University of Heidelberg

Patient willingness to pay for preventive measures in primary care: a study of five GPs in a German community

Summary

Objective: To explore the willingness of patients in a usual primary care setting to pay out-of-pocket fees for their own health promotion, in correlation with risk factors and net income, and compared to patients of an educational programme.

Methods: A standardised health survey carried out in five general practices (GPs) of a small community with a special GP-based health education programme was combined with a questionnaire to explore the special attitudes of patients from a practice sample ($n = 973$) and from educational courses ($n = 202$): covering, in addition to cardiovascular risk factors, the sociodemographic factors, net income, and out-of-pocket fees that could be spent for own health promotion.

Results: After attending an educational programme, the patient's willingness to spend 15–40 €/month for their own health promotion was high but there was no correlation with the income ($p < 0.56$), in contradiction to the patients of the practice sample who would pay more money the more they earn ($p < 0.001$). High levels of cardiovascular risk were associated with low education ($p < 0.001$), but net income and willingness to pay for preventive measures did not significantly correlate with cardiovascular risk factors.

Conclusion: Participants of educational courses are willing to pay a rational out-of-pocket fee for preventive measures without correlation with their incomes, thus reducing the social gradient; future preventive measures should take into account that reasonable cost sharing is well accepted by well-informed patients.

Keywords: Willingness to pay – Health promotion/prevention – Educational courses – Community – General practice.

Since the 1970s, community-based health programs have been implemented in many western countries, especially in order to prevent cardiovascular diseases (Farquhar et al.

1990; Puska et al. 1985; Nüssel 1985). Frequently, the long-lasting practical implementation, effectiveness and efficiency of such programs could not be proven as reports by Smith et al. (1997) and Luepker (1994) have confirmed. In Germany, in the CINDI demonstration area (Countrywide Non-communicable Diseases Intervention program of WHO), the special “three level strategy” of general practitioners was implemented (Wieseemann et al. 1996): The combination of the GP's consultation hours (1st level) with group work in the practice (2nd level) and at the community level (3rd level) that had been successfully tested in the German Cardiovascular Prevention Study (GCP) (Scheuermann et al. 2000). Especially in the community of Oestringen, near Heidelberg, this system has been regularly providing health surveys that have been performed in the GPs and in 22 groups of a health education programme since 1992. This community has about 12 700 inhabitants; the health groups continuously have about 350 participants. After pooling, the practice data (e.g., body mass index (BMI)), blood pressure, smoking, cholesterol, and health behaviour) approximately reflect the health status of the local population (Wieseemann et al. 1996). Only a few risk factors could be consistently reduced over a long period of time (Wieseemann et al. 1997) as it is generally not easy to continuously maintain motivation (Erhardt 2002; Medder et al. 1997; Smith et al. 1997) and, in particular, participation in GP- and community-based health measures may be refused because of costs, even though these may be low. For half a century the German public has been accustomed to having all health-related costs taken over by the various branches of health insurance and not paying anything for themselves, reflecting an attitude that in times of sparse resources cannot be maintained and is therefore subject to change. The survey of 1998 was therefore combined with a questionnaire concerning attitudes towards personal expenditures for health.

On the background of increasing literature on willing-to-pay and willing-to-accept studies (Thomas et al. 2000; Diener et

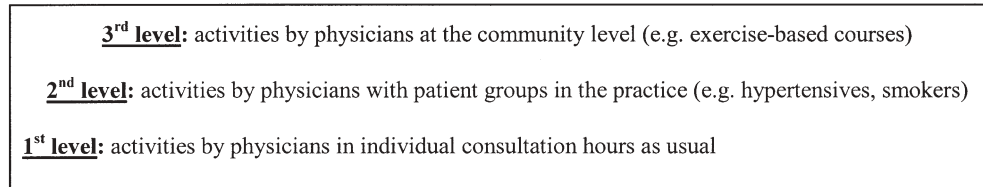


Figure 1 The "Three level strategy" of primary care physicians

al. 1998; Lindholm et al. 1997; Corso et al. 2002) we wanted to know which factors affect willingness to spend personal funds for health promotion and disease prevention, specifically in a primary care setting.

Methods

Design

This is a quality controlled cross-sectional study (with a control group) in the framework of a long-term GP-based intervention study of one community.

Setting

The survey of 1998, as before, was performed as a sample in the five large GPs of the community during six weeks in March and April (Wiesemann et al. 1997). In addition to the 1 020 patients of the GPs, the 202 participants of the health courses were examined and filled in the questionnaire pertaining to personal health expenditures.

Intervention

The intervention applies to the three level strategy of GPs (Fig. 1): diabetics, smokers, hypertensives, overeaters or others are counselled as usual (1st level) and are referred to a patient education programme (group therapy in the practice) if appropriate (2nd level). For maintaining health or preventing relapse there is a chance for long-term motivation in one of the 22 educational courses at the community level (3rd level), where exercise plays a special role (Perrin et al. 2002; Wiesemann et al. 1997).

However, all the courses provide not only gymnastics or jogging but also, following the holistic view of our model, counselling in nutrition, stress control, and medical advice (for 30 €/six months). The access to the third level, the community level, is open to all citizens who might be motivated into participating simply by the community health guide or the local newspaper; about half of the participants follow the specific recommendation of their GPs. The local health guide is available on the Internet (www.dr-wiesemann.de) (Wiesemann et al. 1996) and at the community administration office that provides the exercise rooms free-of-charge.

Procedures

All patients older than 16 years were examined briefly and questioned by the doctors or a nurse when visiting the doctor for whatever reason. The essential data (blood pressure, BMI, cholesterol, smoking etc. and the answers to our questions) were gathered within 15–20 minutes. The same procedure was carried out for all the attendants of 18 from 22 courses (70%) at the community level. Participants of the educational groups were excluded from the practice samples.

Questionnaire

The evaluation tool covers biomedical and behavioural indicators (BMI, cholesterol, blood pressure, smoking), socio-demographic data including education and profession, and the following special questions:

1. What is your net income/month for your household, less than 750 €, 750–1 250 €, 1 250–2 000 €, 2 000–4 000 €, or more than 4 000 €?
2. Are you willing to spend your own money for health promotion, e.g., educational health courses, healthy nutrition or exercise? If you agree, how much: less than 15 €/month, 15–40 €, more than 40 €?
3. How do you classify your state of health: good, sufficient, bad?

A pilot study with 20 patients had confirmed our practical experience as GPs concerning the range of net income and out-of-pocket fees for preventive measures. It was of major interest to explore the influence of the net household income together with being part of a higher risk group. Our classification of net income corresponds to the classification in other studies (Winkelby et al. 1992).

Statistical procedures

Standard descriptive analyses were performed by help of the SAS software package. Significance tests (chi-square test) were not meant to imitate confirmatory statistics but should only help to facilitate interpretations. Since two independent variables are involved, frequency tables were generally tested using the chi-square test or, with too small cell numbers, using the Fishers Exact test. Testing according to

Table 1 Net income of course participants (educational program, n = 179) and practice patients (n = 801)

Income per month	Educational group		Practice sample		Total
	n	%	n	%	
Less than 750 €	26	15	92	11	118
750–1250 €	75	42	298	37	373
1 250–2 000 €	53	30	252	31	305
2 000–4 000 €	24	13	143	18	167
More than 4000 €	1	1	16	2	17
Total	179	100	801	100	980

Cochrane-Matek-Haenszel was used for comparison of the income/expenditure behaviour in the two groups.

Results

Collectives

Three patients of the practice sample refused to participate, leaving the data of 1 222 persons (1 020 patients and 202 course participants) for initial analysis; finally, 973 practice patients and 202 participants of the educational courses could be analysed completely. The mean age in the practice sample was 50.8 years (49.8% males), and 56.7 years in the educational groups (18.6% males). Nearly 3/4 of all participants were married, only two persons were living alone.

Education

About 2/3 of the study participants had graduated from secondary school, 18% from grammar school, and only 9% had higher education (college or university). There was no significant difference between the practice sample and the educational groups at community level.

Net income

801 data records (82%) were available for net income in the practice sample and 179 (88.6%) in the educational groups (Tab. 1). In both groups the majority of the samples (69.1%) had a net household income between 750 and 2 000 €. Only 2% had a net income of more than 4 000 €, 11% less than 800 €. Again, there was no remarkable difference between the two groups. Since nearly three quarters of the study participants were married and only two persons were living alone, since the mean age was higher than 50 years, and since we know of only few households with more than four members, we may assume that the net income applies predominantly to a household of two to three persons.

Willingness to pay for preventive measures/health promotion

The majority of patients in both groups were willing to spend 15–40 € per month for their own health promotion, but the difference between the practice patient group and the parti-

cipants of the educational courses (community groups) was significant ($p < 0.001$): 52% of the latter groups were willing to spend 15–40 €/month, but only 40% of the practice patients were willing to do so. Extreme unwillingness (pay no out-of-pocket fees at all) or extreme willingness (spend more than 40 €/month) were found more frequently in patients of the practice sample (Fig. 2).

Willingness to pay according to net income

There was no correlation between the willingness to pay and net income in the community groups, in contradiction to the patients of the practice sample who were willing to spend more money the more they earned; this difference between the two groups was significant ($p < 0.0001$, Tab. 2).

Comparing only the women of both groups (because of increased matching), this difference is also significant ($p < 0.05$, Tab. 3)!

Willingness to pay according to cardiovascular risks

The difference between the group of higher risk (at least two of the four risk factors, n = 381) and the low risk group (no or one risk factor, n = 639) concerning the willingness to pay was not significant (Tab. 4), even though the high risk group classified their health status as poor.

An additional finding is that high school graduates are underrepresented among the high risk group ($p < 0.01$).

Discussion

Cross-sectional surveys proved to be feasible for GPs, especially in this community setting, facilitating a very high response rate of 99.5% compared to longitudinal or other cross-sectional studies (Marmot et al. 1991; Assaf et al. 1995; Puska et al. 1985; Luepker 1994) because all the patients were questioned and examined simultaneously and only once by their GP, in the practice or in the course class room. Since, in Germany, no similar study has been undertaken in a primary care setting up to now, we checked the range of fees that patients would be willing to pay for preventive measures in a pilot study which finally led to the used graduation.

Figure 2 Willingness to pay (per month) in the different groups. The difference was significant: $p < 0.001$

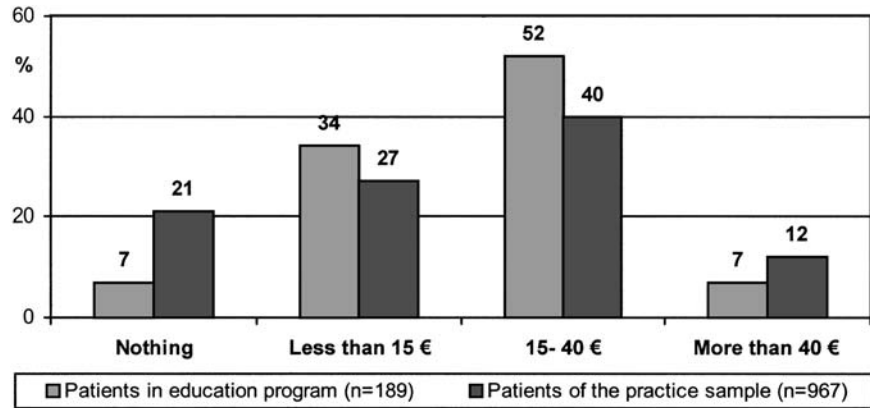


Table 2 Willingness to pay in the two groups related to their net income (educational group: $n = 168$; practice sample: $n = 776$). The relation of income and out-of-pocket fees in both groups is significantly different ($p < 0.0001$). Within the educational group WTP was not related significantly to net income in contrast to the situation within the practice sample

Income	Out-of-pocket-fees															
	Educational group								Practice sample							
	Nothing		0-15 €		15-40 €		> 40 €		Nothing		0-15 €		15-40 €		> 40 €	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Less than 750 €	1	4	11	48	10	44	1	4	23	26	21	24	35	41	8	9
750-1250 €	4	6	25	37	34	50	5	7	70	25	83	29	111	39	19	7
1250-2000 €	5	10	18	35	26	50	3	6	38	15	76	30	106	43	29	12
2000-4000 €	2	8	6	25	14	59	2	8	26	19	21	15	61	43	33	23
More than 4000 €	0	0	0	0	1	100	0	0	2	13	3	19	7	44	4	25
	12	7	60	36	85	51	11	6	159	21	204	26	320	41	93	12

Table 3 Willingness to pay in the two groups related to their net income, women only (educational group: $n = 136$; practice sample: $n = 380$). The relation of income/out-of-pocket fees among the women in both groups is significantly different ($p < 0.05$)

Income	Out-of-pocket-fees															
	Educational group								Practice sample							
	Nothing		0-15 €		15-40 €		> 40 €		Nothing		0-15 €		15-40 €		> 40 €	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Less than 750 €	1	5	10	50	8	40	1	5	11	22	11	22	23	46	5	10
750-1250 €	4	7	19	35	28	51	4	7	32	21	43	28	67	44	10	7
1250-2000 €	4	9	14	32	23	52	3	7	13	12	43	38	43	38	13	12
2000-4000 €	2	11	3	17	11	61	2	11	10	16	10	17	25	41	16	26
More than 4000 €	0	0	0	0	1	100	0	0	0	0	1	20	3	60	1	20
	11	8	46	34	69	51	10	7	66	17	108	29	161	42	45	12

Table 4 Out-of-pocket fees for healthy lifestyle in the selected two groups of the practice sample ($n_{total} = 1020$, missing: $n = 53$). The difference was not significant.

Out-of-pocket fees	Low risk patients		High risk patients		Total
	n	%	n	%	
Nothing	126	21	74	20	200
Less than 15 €	158	26	104	28	262
15-40 €	243	40	147	40	390
More than 40 €	75	13	40	12	115
Total	602	100	365	100	967

801 of the 1 020 practice patients (82%) and 179 of the 202 participants of the educational courses (89%) provided information about their income. This was – as expected – a little less than in the large (anonymous) German Cardiovascular Prevention study (Helmert et al. 1989). The practice sample showed a similar range as found e.g., in a Dutch study of GPs (Evers et al. 1997). We explain the bias of underrepresented men in the educational group by the open access to the groups at community level with the consequence of a higher utilisation of this health service by women as is common in many health care systems (Henderson et al. 1999; Bergmann & Kamtsiuris 1999), especially concerning prevention (Stock et al. 2001) or group participation (Holmes 2002). However, this bias did not confound the results as the comparison of women alone shows. On the other hand we accept this bias as an advantage for our intervention when considering the health promoting impact of the spouses of the course participants at community level (Moller et al. 1991).

The results showed that the willingness for out-of-pocket fees of the educational course attendants, mainly 15–40 €, did not depend on their incomes ($p = 0.56$) in contrast to the attitude of patients of the practice sample who were willing to pay more the higher their net income was. The difficulties in the assessments of willingness to pay and WTA studies not only apply to community-based prevention programmes (Lindholm et al. 1997; Pirie et al. 1994) but also to the procedures and evaluation management of other studies and programmes as discussed by Luchini et al. (2003) or Shackley and Donaldson (2002). Indeed, we were predominantly interested in the future of our intervention model, insofar aiming at a more tailor-made programme with increased participation and appropriate cost-sharing. The course participants were probably already motivated for health promotion before attending an educational course, but it might have been possible that these participants would have been willing to pay an unreasonable amount of money for their health before and/or after the course. We assume that the practice-based preventive measures in the educational courses provide educational information that help the participants make well-based decisions concerning expenditures for their personal health, thus reducing the social gradient (Helmert et al. 1993). This conclusion is supported by the

fact that only 40% of the selected risk group of the practice sample were willing to spend 15–40 €/month for their own health compared to 52% of the patients of the educational groups.

As is known, the specific efforts in sales promotion in the health market often make an independent judgement difficult for laypersons. This branch of advertising works with similar methods like the sales promotion of the cigarette industry that specifically addresses the misinformed, less educated social strata (specific groups of women, workers, and minorities) (Davies 1987) that often, in addition, do not know how to cope with psychosocial stress (Marmot et al. 1991). According to former investigations, there was a correlation between lower education and low income with hypertension, obesity, and – to a lesser extent – smoking (Lantz et al. 1998; Steptoe et al. 2000; Winkelby et al. 1992) in our study. For instance, dropping out of high school or the number of educational years correlates with higher cardiovascular risk in later life (Lantz et al. 1998; Marmot et al. 1991). We therefore consider patient education to be a very important matter in general practice where patients are cared for over a long period of time, including maintenance of motivation at community level with a good health climate.

Risk factors had no impact on health-related expenditures in our study. After all, only 20% of the patients refused any contribution though, like in the Netherlands (Severens et al. 2000), the German population is not familiar with paying for health care facilities out of their own pocket up to now.

Conclusions

Patient education is a very important task for GPs, because, in connection with an educational program, the patient's willingness to spend a rational amount of money for own health-promoting activities (15–40 € per month) no longer depends on their net income, in contrast to patients of a practice sample.

Net income and willingness to provide own expenditures for health promotion may not significantly correlate with cardiovascular risk factors, in contrast to education.

There is a chance for family doctors to reduce the social gradient in patient participation in preventive measures if a health education programme can be provided at community level.

Zusammenfassung

Gesundheitsförderung in der ärztlichen Primärversorgung: wer ist bereit selbst dafür zu zahlen? Eine Studie in den fünf Allgemeinpraxen einer Gemeinde

Fragestellung: Es sollte geklärt werden, wer unter welchen Umständen (Einkommen, Gesundheitsrisiken) bereit ist, gesundheitsfördernde Massnahmen im Rahmen der hausärztlichen Versorgung selbst zu bezahlen

Methoden: Seit Jahren wird in den fünf grossen Hausarztpraxen einer Gemeinde von 12 700 Einwohnern, denen ein spezielles Gesundheitsprogramm zur Verfügung steht, zur Qualitätssicherung eine standardisierte Gesundheitserhebung in Form von Praxisstichproben durchgeführt. 1998 erfolgte zusätzlich eine Befragung sowohl der Praxispatienten ($n = 973$) als auch der durch das Gesundheitsprogramm geschulten Patienten ($n = 202$), die neben den Risikofaktoren und soziodemographischen Angaben auch das Nettoeinkommen und Fragen nach der Höhe der selbst für gesundheitsfördernde Massnahmen einzusetzenden Mittel einschloss.

Ergebnisse: In Verbindung mit der Teilnahme am hausärztlichen Gesundheitsprogramm auf Gemeindeebene war die Bereitschaft der geschulten Patienten hoch, 15–40 €/Monat für gesundheitsfördernde Massnahmen auszugeben, ohne dass dies von ihrem Einkommen abhing ($p < 0,56$), im Gegensatz zu den ungeschulten Praxispatienten, die um so mehr zu zahlen bereit waren, je mehr sie verdienten ($p < 0,001$). Diese Bereitschaft korrelierte allerdings nicht mit den eigenen Gesundheitsrisiken, die bei Patienten mit geringem Einkommen stärker ausgeprägt waren ($p < 0,001$).

Schlussfolgerungen: Nach der Teilnahme an einer Gesundheitsschulung sind die Patienten bereit, selbst einen angemessenen (vernünftigen) Beitrag für präventive Massnahmen zu leisten, und zwar unabhängig von ihrem Einkommen. So kann durch gute Information der soziale Gradient im Hinblick auf die Nutzung gesundheitsfördernder Massnahmen reduziert werden, was für zukünftige Angeboten zur Gesundheitsförderung von Bedeutung ist.

Résumé

Promotion de la santé par les médecins généralistes: Qui est prêt à payer pour des mesures préventives? Une étude de cinq cabinets des médecins de famille dans une commune allemande

Objectifs: Explorer la disposition des patients à payer de leur poche les honoraires pour la promotion de leur propre santé selon leurs facteurs de risque et leurs revenus nets, et en comparaison avec des patients d'un programme éducatif.

Méthodes: Une étude standardisée sur la santé effectuée dans cinq cabinets de médecins généralistes d'une petite commune avec un programme spécial d'éducation à la santé intégré dans les cabinets. En 1998 un questionnaire a été soumis à un échantillon de patients sélectionnés dans des cabinets médicaux et n'ayant suivi aucun programme éducatif ($n = 973$) et à des patients ayant suivi un enseignement ($n = 202$): les questions portaient sur les facteurs de risque cardio-vasculaire, les facteurs sociodémographiques, le revenu net, et les dépenses propres consenties pour la promotion de leur propre santé.

Résultats: Après avoir participé à un programme éducatif, la disposition d'un patient à dépenser 15 à 40 €/mois pour l'amélioration de sa propre santé était élevée mais il n'y avait pas de corrélation avec le salaire net ($p < 0,56$), contrairement aux patients de l'échantillon des cabinets médicaux qui dépenseraient plus d'argent plus leurs revenus sont élevés ($p < 0,001$). Les hauts facteurs de risque cardio-vasculaire étaient associés à une éducation faible ($p < 0,001$) mais le revenu net et la disposition à payer de sa poche n'étaient pas corrélés de façon significative avec les facteurs de risque cardio-vasculaire.

Conclusion: A la suite de cours d'éducation pour la santé, les participants étaient prêts à dépenser une part raisonnable des coûts de leur poche pour des mesures préventives. Ceci n'est pas en corrélation avec leurs revenus, réduisant ainsi le gradient social. Des mesures préventives futures devraient prendre en compte le fait qu'une participation raisonnable aux frais serait bien acceptée par des patients bien informés.

References

- Assaf AR, Helmert U, Lasater TL, Carleton RA, Greiser E (1995). Measuring cardiovascular disease risk factor levels: international comparisons between Bremen-north/west (Germany) and two southeastern New England (USA) cities. *Soz Präventiv Med* 40: 218–29.
- Bergmann E, Kamtsiuris P (1999). Utilisation of medical services [in German]. *Gesundheitswesen* 61 (Suppl 2): 138–44.
- Corso PS, Hammitt JK, Grahma JD, Dicker RC, Goldie SJ (2002). Assessing preferences for prevention versus treatment using willingness to pay. *Med Decis Making* 22 (Suppl 5): 92–101.
- Davis RM (1987). Current trends in cigarette advertising and marketing. *N Eng J Med* 316: 725–32.
- Diener A, O'Brien B, Gafni A (1998). Health care contingent valuation studies: a review and classification of the literature. *Health Econ* 7: 313–26.
- Erhardt L (2002). Are we treating to target? *Atheroscler Supp* 1: 9–14.
- Evers S, Stevens F, Diederiks J, et al. (1997). Age-related differences in cognition. *Eur J Public Health* 8: 133–9.
- Farquahr JW, Fortmann SP, Flora JA, et al. (1990). Effects of community wide education on cardiovascular risk factors: the Stanford Five City Project. *J Am Med Ass* 64: 359–65.
- Helmert U, Herman B, Joeckel KH, Greiser E, Madans J (1989). Social class and risk factors for coronary heart disease in the Federal Republic of Germany: results of the baseline survey of the German Cardiovascular Prevention Study. *J Epidemiol Community Health* 43: 37–4.
- Helmert U, Shea S, Greiser E, Maschewsky-Schneider U (1993). Effects of 3.5 years of community intervention on social class gradients for cardiovascular disease risk factors in the German Cardiovascular Prevention study. *Ann Epidemiol* 3: 36–43.
- Henderson P, Glassman A, Luis Montes J, Hernández P (1999). <http://wbln0018.worldbank.org/lac/lacinfoclient.nsf/>.
- Holmes L (2002). Women in group and women's groups. *Int J Group Psychother* 52: 171–88.
- Lantz PM, House JS, Lepkowschi JM, Williams DR, Mero RP, Chen J (1998). Socioeconomic factors, health behaviors, and mortality: results from a nationally representative prospective study of US adults. *J Am Med Ass* 9: 1703–8.
- Lindholm LA, Rosen ME, Stenbeck ME (1997). Determinants of willingness to pay taxes for a community-based programme. *Scand J Soc Med* 25: 126–35.
- Luchini S, Protiere C, Moatti JP (2003). Eliciting several willingness to pay in a single contingent valuation survey: application to health care. *Health Econ* 12: 51–64.
- Luepker RV (1994). Community trials. *Prev Med* 23: 602–5.
- Marmot MG, Smith GD, Stansfeld S, et al. (1991). Health inequalities among British civil servants: the Whitehall II study. *Lancet* 337: 1387–93.
- Medder J, Susman JL, Gilbert C, Crabtree BF (1997). Dissemination and implementation of put prevention into family practice. *Am J Prev Med* 13: 345–51.
- Moller L, Kristensen TS, Holnagel H (1991). Social class and cardiovascular risk factors in Danish men. *Sand J Soc Med* 19: 116–26.
- Nüssel E (1985). Community-based prevention: the Eberbach-Wiesloch Study. In: Hofmann H, ed. Primary and secondary prevention of coronary heart disease. Berlin; Heidelberg; New York: Springer.
- Perrin C, Ferron C, Gueguen R, Deschamps J-P (2002). Lifestyle patterns concerning sports and physical activity, and perceptions of health. *Soz Präventiv Med* 47: 162–71.
- Pirie PL, Stone EJ, Assaf AR, Flora JA, Maschewsky-Schneider U (1994). Program evaluation strategies for community-based health promotion programs: perspectives from the cardiovascular disease community research and demonstration studies. *Health Educ Res* 9: 23–36.
- Puska P, Nissinen A, Tuomilehto J, et al. (1985). The community-based strategy to prevent coronary heart disease: conclusions from the ten years of the North Karelia Project. *Am Ann Rev Public Health* 6: 226.
- Scheuermann W, Razum O, Scheidt R, et al. (2000). Effectiveness of a decentralised, community-related approach to reduce cardiovascular disease risk factor levels in Germany. *Eur Heart J* 21: 1591–7.
- Severens JL, de Boe ThD, van Roosmalen MS, Verweij PE, van der Wilt GJ (2000). Validity of willingness-to-pay for non decisional diagnostic information. *Health Econ Prev Care* 1: 9–13.
- Shakley P, Donaldson C (2002). Should we use willingness to pay to elicit community preferences for health care? New evidence from using a “marginal” approach. *J Health Econ* 21: 971–91.
- Smith PJ, Moffart MEK, Gelskey SC, Hudson S, Kaita K (1997). Are community health interventions evaluated appropriately? A Review of six journals. *J Clin Epidemiol* 50: 137–46.
- Steptoe A, Rink E, Kerry S (2000). Psychosocial predictors of changes in physical activity in overweight sedentary adults following counseling in primary care. *Prev Med*: 183–94.
- Stock C, Wille L, Kramer A (2001). Gender-specific health behaviours of German university students predict the interest in campus health promotion. *Health Promot Internation* 16: 145–54.
- Thomas R, Donaldson C, Torgerson D (2000). Who answers “willingness to pay” questions? *J Health Serv Res Policy* 5: 7–11.
- Wiesemann A, Fay K, Scheidt R, Scheuermann W (1996). Welchen Beitrag können niedergelassene Ärzte zur Gesundheitsförderung an Schulen leisten? *Soz Präventiv Med* 41: 79–89.
- Wiesemann A, Metz J, Nuessel E, Scheidt R, Scheuermann W (1997). Four years of practice-based and exercise-supported behavioural medicine in one community of the German CINDI area. *Int J Sports Med* 18: 308–15.
- Wiesemann A, Nüssel E, Scheuermann W, Topf G (1996). Improving cardiovascular health in the German CINDI area: methods and results of the practice-based “Three Level Strategy”. *Eur J Gen Pract* 2: 117–25.
- Winkleby MA, Jatulis DE, Frank E, Fortmann SP (1992). Socioeconomic status and health: how education, income, and occupation contribute to risk factors for cardiovascular disease. *Am J Public Health* 82: 816–20.

Address for correspondence

Armin H. Wiesemann, MD
Kirchstrasse 44
D-76684 Oestringen
Tel.: +49 7259 8822
Fax: +49 7259 8823
e-mail: armin.wiesemann@t-online.de