

Differences of the quality of care experience: the perception of patients with either network or conventional health plans

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Background. Various studies have been performed on differences in quality measures between different models of primary care with inconclusive results. In Switzerland, up to a third of the population chooses network health plans including gatekeeping to profit from lower premiums and almost half of GPs work in primary care networks.

Objective. To determine differences in the quality of interpersonal care and practice management between patients consulting a physician organized in a GP network or in independent practice.

Methods. We analysed data of the European Project on Patient Evaluation of General Practice Care (EUROPEP) questionnaire measuring the quality of the patient–physician interaction and practice management of 473 primary care physicians. From the 25 178 patients who completed the questionnaire, 72.2% (18 174) consulted a physician participating in a network and 27.8% (7004) a physician working in independent practice.

Results. The overall answer pattern of EUROPEP questions shows that patients were generally more satisfied with physicians in independent practice. Particularly, questions within the domains ‘relation and communication’ and ‘information and support’ and to a lesser degree within ‘Medical care’ were significantly answered more favourable by patients of independent physicians. Stratification for chronic diseases showed that significant differences favouring independent physicians were less evident in patients with chronic diseases than in the non-chronic group.

Conclusions. The results show differences in the quality of interpersonal care and practice management experienced by patients consulting network—or independent physicians. Therefore, we suggest that efforts to reduce health care spending by promoting more integrated care must also focus on monitoring and improving patient perceived qualities.

Keywords. Family medicine, patient-centered care, practice management.

Introduction

Ambulatory health care in Switzerland is characterized by independent physicians working mostly in own practices and reimbursement is on a fee-for-service basis. Patients have direct access to specialists with little gatekeeping to regulate access. Swiss residents must purchase health insurance individually from competing insurance companies. This mandatory insurance covers a standardized basic benefit package that includes a wide range of health services.¹ Insurance is offered by almost 100 companies with public subsidies provided to low-income populations. Costs for health care increased at an average rate of 5% per annum since 2000² and cost per gross domestic product rank among

the highest worldwide. There have been various efforts to address expenditure growth in Swiss health care and one such effort is the introduction of managed care plans.

At present, up to a third of the population chooses various forms of managed care health plans. The main difference to conventional plans is that they require a mandatory gatekeeping system and more integration in the care process (e.g. case and disease management). Patients enrolled in such health plans have therefore less choice of providers and cannot, with the exception of gynaecologists and ophthalmologists, self-refer to specialists but patients pay ~10% lower premiums.

Almost half of GPs work in primary care networks and actually there are 86 such networks working in Switzerland.³ Seventy-nine per cent of these networks

include varying forms of financial accountability, such as capitation payments as an incentive to coordinate and eventually to limit the use of medical services. Several Swiss studies comparing gatekeeping and fee-for-service plans show savings of ~20% associated with gatekeeping after adjusting for case-mix.⁴

Cost savings in managed care were always suspected to be the result of withholding necessary diagnostic or therapeutic procedures or providing medical care of lower quality compared to traditional care.⁵ In contrast, it has been argued that more coordination (i.e. more integration across care providers) may enhance the quality of care.⁶ The results in the literature have so far been mixed: some reports have shown that patients in health maintenance organizations are less satisfied with access to care, with the availability of appointments, with interpersonal aspects and with continuity of care. Other studies have found no significant difference in the quality of care between independent physicians and physicians organized in networks.^{7,8} On the other hand, a more recent report showed that integrated care models with more centralized decision making and close physician affiliations within networks were able to provide higher quality care, at least for medical services that are provided on a routine basis.⁹ A review recently also reported that integrated care programmes seemed to have positive effects on the quality of care for chronically ill patients.^{10,11}

The present study refines and expands this research by investigating differences in the patient–physician relationship of patients consulting a physician organized either in a network or in a conventional practice. The specific research question was how qualities of interpersonal care and practice management, measured with the European Project on Patient Evaluation of General Practice Care (EUROPEP) instrument,¹² differ between independent GP's and physician's working in one of the 86 GP networks in Switzerland?

Methods

Setting

The study is based on EUROPEP data collected in Switzerland within the setting of practice assessment programmes including the European Practice assessment program.¹³ Data of 473 physicians accredited for primary care by the Swiss Medical Association were analysed.¹⁴ Of these 473 physicians, 148 (31%) were working as independent GPs and 325 (69%) in 21 of the 86 GP networks. All participating practices were located in the German speaking part of Switzerland. In case of multiple EUROPEP evaluations per practice, only the data of the last evaluation were included in the study. Community data of the Swiss Federal Statistical Office were linked using zip codes with physician's data in order to account for geographic

effects of practice location in the analysis, particular for urban–rural differences. All physicians enrolled in the Swiss practice assessment program were selected for the study; however, participation in such programmes is voluntary and the study is therefore based on a sample of physicians convinced and dedicated to quality assurance in Swiss ambulatory practice.

Patient data included type of health plan, demographic information, self-rated health status and duration of disease and a EUROPEP questionnaire to evaluate the quality of interpersonal care and practice management.¹⁵ This questionnaire has 23 questions, each with a five-point Likert scale ranging from poor to excellent, dealing with five main dimensions: relations and communications, medical care, information and support, continuity and cooperation and facilities availability and accessibility. Two additional questions about overall patient adherence were also included. These two questions were originally used to validate the psychometric characteristics of the EUROPEP questionnaire.¹² Questionnaires were completed by patients in the waiting room and handed to the practice staff in sealed envelopes. Patients were randomly selected and eligibility criteria included only age >18 years and literacy to understand and complete the questionnaire in German, French, Italian or English. Patients were sampled during 1998–2008. Patients participated on a voluntary basis in the project and the compliance of patients to complete questionnaires in this setting was usually $\geq 90\%$. This study is exempted from ethic committee review according to Swiss law.

Data management and data analysis

All data were recorded using a relational database and data analysis was performed in two steps. A first step included descriptive analyses using tables and graphs. In a second step, multivariate logistic models were developed to analyse the EUROPEP data. The five level Likert scale of the EUROPEP questionnaire was dichotomized with the most favourable answer category coded as one and all other non-missing categories as zero. Results were interpreted as the odds ratio (OR) of the most favourable answer option in network health plans to standard health plans.¹⁶ In order to justify this dichotomous approach, we also analysed our data by pooling the two top answers levels as published in the very first study using the EUROPEP instrument 10 years ago.¹⁰ The respective results indicated considerable ceiling effects with >85% favourable answers for almost all questions in both groups. Discriminatory properties of this procedure were therefore not deemed as appropriate and this type of analysis was omitted from the study.

Cofactors of multivariable models were defined based on results of preliminary univariable analyses including chi-square tests and analysis of variance procedures. Cofactors were used to adjust for demographic and health-related factors of patients and for

physician-related factors. Practice location was categorized into a nine level community code according to specifications of the Swiss Federal Statistical office.¹⁷ This classification is based on the principle of hierarchic relationships between urban centres and peripheral communities and the underlying concepts include criteria of economic, morphologic and social differences and also measures of urbanization and commuting characteristics.

The preliminary analyses also showed a considerable linear relationship between self-rated health status and patient-experienced duration of disease. In order to account for both factors, we decided to stratify the statistical analysis by duration of disease and to keep health status as a cofactor in the models. Duration of disease was categorized into two levels as non-chronic for <3 months and chronic for ≥3 months. Each of the 25 questions of the EUROPEP questionnaire was analyzed in an individual manner with the same model. The final model used for this study had the following structure:

Outcome	Probability of answer option 'Excellent'
Explanatory variables:	
Physician's level	Practice type (network/independent) Gender of physician Practice experience (years) Practice location (urban-rural; nine levels)
Patient's level	Age Gender Education (four levels) Health status (five levels)

All analytical procedures accounted for clustering of observations at the practice level using Taylor series expansion procedures (PROC SURVEYLOGISTIC, SAS 9.2; SAS Institute Inc., Cary, NC). Ninety-five per cent confidence intervals (95% CIs) of means, proportions and ORs were calculated accordingly. We used two significance levels for the study, a limit of $P < 0.05$ was set for all tests and a limit of $P < 0.01$ was additionally set for the EUROPEP data in order to address a potential problem related to multiple tests. SAS 9.2 (SAS Institute Inc.) was used for all calculations.

Results

Characteristics of physicians and practices

Of the 473 physicians who were enlisted in the study, 86 were female and 387 were male, there was no significant difference between network and independent physicians (20.0% versus 14.2% females), average age was 54.5 years and no significant difference was observed (54.2 and 55.2 years for network and independent physicians, respectively). Physicians had on average 23.3 years of professional experience and no significant differences were observed between network

and independent physicians (medians: 19 and 20 years). The 473 participants corresponded ~7% to 8% of all Swiss primary care physicians who were accredited in Switzerland between 1998 and 2008. On average, 58.6 patients were sampled per physician (60 versus 55 patients in network and independent physicians). There were significant differences for practice locations: 75.5% of network physicians were localized in urban and suburban areas versus 57.4% for independent physicians.

Characteristics of the patient population

From the 25 178 patients who completed the questionnaire, 72.2% (18 174) consulted a physician enlisted in a network and 27.8% (7004) a physician in independent practice (Table 1). More than two-thirds of all consultations occurred in practices located in urban and suburban areas. The overall proportion of women in the patient population was 59.5% and there were only minor gender differences between network and independent practices. However, there was a significant difference in the age structure of patient populations (53.1 years for network and 54.1 years for independent physicians) and the educational status of patients was also significantly different across physician groups: more patients in network practices had higher levels of education than patients of independent physicians.

No significant differences in self-rated health status of patients were observed but the proportion of patients with chronic health problems was significantly higher for patients of independent physicians. Patients consulting a network physician had on average significantly more consultations with the same physician

TABLE 1 Demographic attributes and self-rated health status of patients

	Network		Independent	
	# ^b	%	#	%
Number of patients	18 174	72.2	7004	27.8
Female patients				
Proportion	10 783	59.3	4187	59.8
Educational status ^a				
Primary/secondary school	5293	29.1	2335	33.3
Professional apprenticeship	8300	45.7	3272	46.7
University degree	3181	17.5	987	14.1
Other	1400	7.7	410	5.9
Self-rated health status				
Excellent	854	4.7	342	4.9
Very good	4154	22.9	1535	21.9
Good	9171	50.5	3546	50.6
Fair	3505	19.3	1388	19.8
Poor	490	2.7	193	2.8
Chronic conditions ^a				
Proportion >3 months	7502	41.3	3242	46.3

^aSignificant differences ($P < 0.05$) between groups using logistic regression with age and gender as additional cofactors.

^bNumber of observations.

during the preceding 12 months than patients of independent physicians, means and medians were 6.6 (4) and 6.0 (5) consultations, respectively.

EUROPEP questionnaire

For almost all of the 25 questions of the EUROPEP questionnaire, the proportion of the most favourable answer option 'excellent' was higher for patients of independent physicians than for network physicians

(Table 2). Significant differences in favour of independent physicians were observed for Questions 1, 2, 3 (relation and communication), Questions 9 and 11 (medical care) and Questions 13 and 14 (information and support). Answers regarding 'continuity and cooperation' and 'facilities availability' were more varied. Questions that were answered in favour of network physicians concerned 'Preparing you for what to expect from specialist or hospital care'¹⁷ and 'the

TABLE 2 Patient satisfaction (EUROPEP questionnaire)

Questions	Independent (%) ^a	Network (%) ^a	Odds ratio ^b
Relation and communication			
1. Making you feel you had time during consultation?	69.044	64.739	0.843**
2. Interest in your personal situation?	65.280	62.256	0.907*
3. Making it easy for you to tell him or her about your problem?	63.264	60.326	0.893*
4. Involving you in decisions about your medical care?	61.985	60.373	0.964
5. Listening to you?	71.319	68.678	0.897
6. Keeping your records and data confidential?	73.824	72.654	0.951
Medical care			
7. Quick relief of your symptoms?	43.503	41.408	0.948
8. Helping you to feel well so that you can perform your normal daily activities?	55.177	53.458	0.952
9. Thoroughness?	66.044	63.734	0.898*
10. Physical examination of you?	59.939	58.021	0.923
11. Offering you services for preventing diseases (screening, health checks and immunizations)	52.154	49.347	0.910*
Information and support			
12. Explaining the purpose of tests and treatments?	66.527	63.713	0.914
13. Telling you what you wanted to know about your symptoms and/or illness?	68.143	64.524	0.884*
14. Helping you deal with emotional problems related to your health status?	57.833	54.591	0.901*
15. Helping you understand the importance of following his or her advice?	53.430	50.179	0.927
Continuity and cooperation			
16. Knowing what s/he had done or told you during earlier contacts?	55.627	53.748	0.960
17. Preparing you for what to expect from specialist or hospital care?	56.723	55.404	1.019
Facilities availability and accessibility			
18. The helpfulness of the staff (other than the doctor)?	68.337	66.675	1.021
19. Getting an appointment to suit you?	70.191	67.055	0.974
20. Getting through to the practice on telephone?	56.004	62.561	1.552**
21. Being able to speak to the GP on the telephone?	59.213	52.631	0.813**
22. Waiting time in the waiting room?	44.510	36.812	0.750**
23. Providing quick services for urgent health problems?	73.469	69.357	0.916
Patient adherence			
24. I can strongly recommend the GP to my friends	74.581	69.058	0.756**
25. I have no reason to consider changing to a different practitioner	78.078	72.027	0.756**

^aProportion of 'excellent' answers.

^bOdds of the occurrence of 'excellent' answers in network health plans to standard health plans.

*Significant differences, $P < 0.05$ between groups using multivariable logistic regression (model structure see Table 1).

**Significant differences, $P < 0.01$ between groups using multivariable logistic regression (model structure see Table 1).

helpfulness of the staff¹⁸ (without statistical significance). Within the domain ‘Facilities availability and accessibility’, one question aimed at ‘getting through the practice by telephone’ was significantly more often answered in favour of network physicians, whereas Questions 21, 22, 24 and 25 were answered significantly more favourable by patients of independent physicians (Table 2).

An analysis stratified for chronic diseases was additionally performed in order to account for potential effects of duration of disease. Preliminary univariable analyses indicated a significant difference between patients with chronic and non-chronic diseases for most questions. However, the multivariate analysis showed comparable overall patterns of more positive responses for independent physicians across all 25 EUROPEP questions between the two types of health plans irrespective of duration of disease (ORs <1 in independent practices, see Figs. 1 and 2). In seven questions (3, 5, 8, 9, 13, 14 and 15), we found significant differences in favour of independent physicians only for non-chronic but not for chronic patients, whereas in five questions (1, 21, 22, 24 and 25), there were significant differences in favour of independent physicians in non-chronic and in chronic patients.

Discussion

A variety of studies have been performed on differences in quality measures (e.g. record-based technical

quality, patients’ assessments of quality) between various models of primary care with inconclusive results.^{6,8,18} This is at least in part due to the growing complexity and multidimensionality of diagnostic and therapeutic procedures but it is also related to problems and inconsistencies in defining and measuring adequate quality indicators in primary care.

In our study, we used the EUROPEP questionnaire, a validated multidimensional instrument comprising 23 and 2 additional questions to test whether there are any differences in the quality of interpersonal care and practice management experienced by patients of physicians enlisted in Swiss GP networks and patients of physicians in independent practice. The overall answer pattern of all EUROPEP questions assessing quality of interpersonal care (Questions 1–17) indicates that patients were generally more satisfied with physicians in independent practice. Particularly, questions within the domains ‘relation and communication’ and ‘information and support’ and to a lesser degree within ‘Medical care’ were significantly answered more favourable by patients of independent physicians. These overall patterns were confirmed by two questions investigating patient adherence that were both answered significantly more favourably by patients consulting an independent physician. Less consistent answer patterns were seen for the domain ‘facilities availability and accessibility’. Waiting time and reaching the GP by telephone were rated poor in both physicians groups but also significantly better in independent practices. In contrast, staff-related items

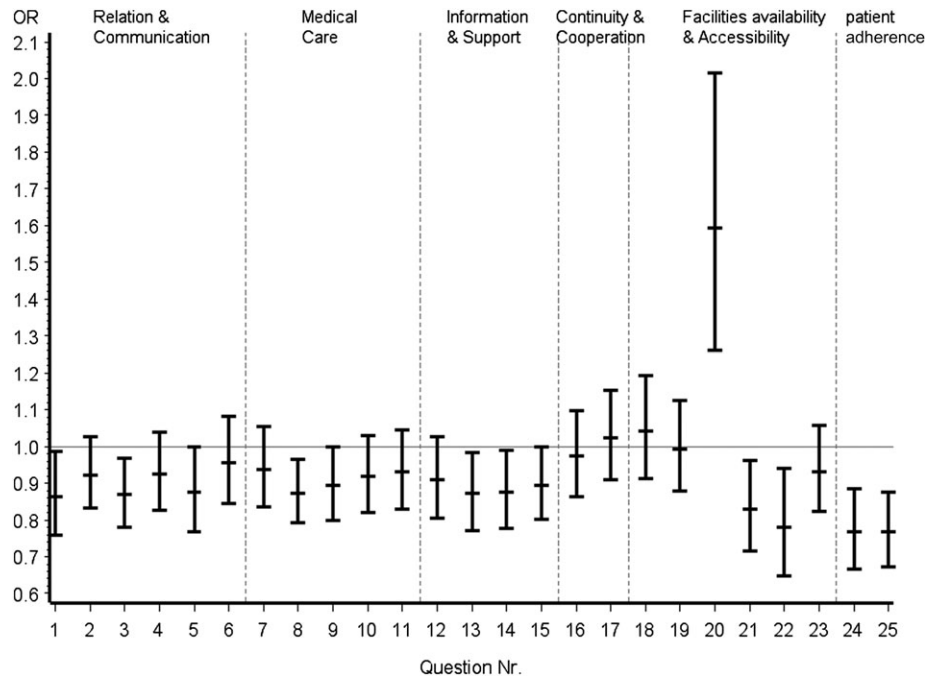


FIGURE 1 EUROPEP answers of non-chronic patients. ORs of the answer ‘excellent’ using multivariable logistic regression. Error bars denote 95% CIs of ORs, error bars including 1 denote non-significant ORs between network and independent GP’s and ORs <1 denote answers in favour of independent physicians

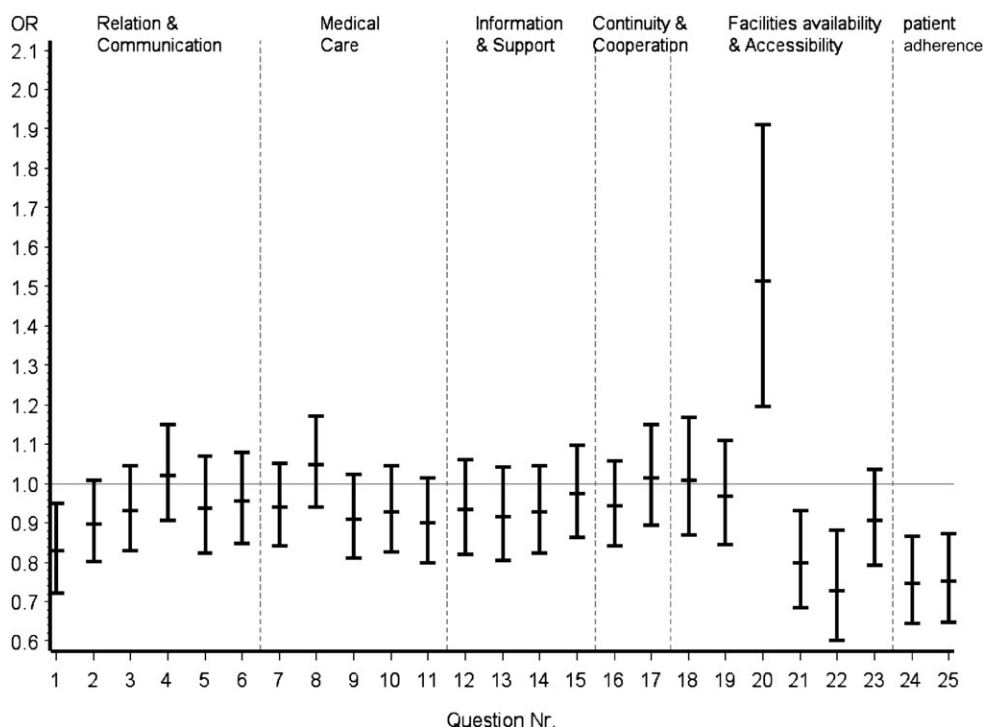


FIGURE 2 EUROPEP answers of chronic patients. ORs of the answer 'excellent' using multivariable logistic regression. Error bars denote 95% CIs of ORs, error bars including 1 denote non-significant ORs between network and independent GP's and ORs <1 denote answers in favour of independent physicians

including helpfulness and reachability by telephone were the only questions that were answered more favourable in network practices.

Based on these results, we assume that there are some significant differences in patient experiences with network and independent physicians in favour of the latter. Our findings are in line with other studies showing that patient satisfaction was significantly lower in larger physician organizations^{7,9} and several reasons may be responsible for this.

Although patient satisfaction is a complex and multidimensional construct,¹⁹ it is regarded as a major indicator of quality in primary care. Patient satisfaction not only depends on characteristics of providers and type of care but also on patient attributes such as pre-conceptions and treatment expectations in particular.^{20,21} Such associations may be of importance for our study as patients with network health plans were significantly younger, had higher education and consultations in network practices occurred more often in urban or suburban areas. Treatment expectations and the subsequent response patterns with respect to communication, information and medical care may therefore differ between patient groups. However, such associations can only be ascertained using methods of qualitative research that were beyond the scope of this article.

Other research showed that personal continuity of care is highly valued by patients who also favour practices with small numbers of GPs and other care

providers.²² Obviously, patients having a consultation with a network GP perceive these aspects differently than those consulting a GP in individual practice.

GP networks may also differ from independent and isolated working GP's in their organizational demands. Developing a GP network that provides high-quality primary care means to maintain an organizational structure with shared goals, efficient division of workload, effective communication and efficient administrative support systems.¹⁵ Those factors may all lead to higher workload and job stress diverting physician's attention from his or her primary objective of patient care and hence lower performance.²³

In recent years, health care as a whole and primary care in particular have developed from an individualistic conception of medical practice into a multidisciplinary domain.²⁴ Innovative models incorporating the chronic care model²⁵ and the notion of a medical home²⁶ were developed and adapted for primary care. This development is particularly important for patients with chronic diseases where a functioning cooperation between health professionals and patients is increasingly important to keep high-quality health care affordable and accessible. It is therefore noteworthy that differences in the dimensions 'relation and communication' and 'medical care' favouring independent practices were less pronounced in patients with chronic diseases than in the non-chronic group. However, both questions assessing patient adherence (Questions 24 and 25) were answered

in favour of independent physicians by both chronic and non-chronic patients.

Limitations

Our study has limitations that need to be acknowledged. We do not know whether there are differences in the motivation to participate in activities for quality assessment and management between the two groups of physicians and selection bias in this respect may have affected our results. Physicians working in GP networks have varying proportions of patients with different network health plans (including gatekeeping and financial accountability) and network physicians also care for patients with conventional health plans (fee-for-service). As a consequence, the level of affiliation of GP's within their network differs in our study. This may be important as it has been shown that integrated medical groups with closer physician affiliation provide higher quality primary care.⁸

With reference to external validity, the results are fully representative for physicians participating in Swiss practice assessments but generalization to the overall population of Swiss GP's is limited. A recent survey of Swiss primary care physicians indicated an average age of 52.6 years and a proportion of 22% female practitioners.²⁷ Our study population is therefore comparable with the general Swiss GP population for age but not for gender. The almost equal proportion of female and male physicians in our study is likely the consequence of sampling exclusively physicians participating in a practice assessment programme and the difference reflects the dynamics of network building. We nevertheless consider our results as important as this particular population of physicians provides guidance for a further expansion of managed care in Switzerland.

Non-matching proportions of physicians providing only non-network care and the respective number of patients (31% versus 27.8%) is most likely the result of different sampling proportions of patients within practices.

It may be furthermore criticized that results were dichotomized into the best possible and all other answer options. This takes into account the tendency of patients to give their doctors favourable ratings. Furthermore, providers must aim for complete patient satisfaction, anything less may lead patients to change physicians.¹⁶ This approach was validated in a similar study²⁸ and is also in line with the concept that standards of excellence attained by top performers should be used as benchmarks of quality in the health care sector.²⁹ Finally, it can be argued that the analysis of our outcome data needs adjustment for the problem of multiple tests. The literature in this field is inconclusive¹⁸ and the decision whether to view the

EUROPEP data as a group or as individual questions remains arbitrary.³⁰ We promote a more informal use of the hypothesis tests in this context, which implies that the overall answer pattern is important but individual *P*-values have less meaning. Consequently, it is possible that our results accidentally mislead the interpretation of individual questions as significant *P*-values can occur by chance alone. An additional more conservative level of statistical significance was therefore provided in the respective table.

In conclusion, our findings show that quality of care is perceived differently by patients of physicians either organized in a network or in an individual practice. Current efforts to promote integrated care within the Swiss health system should therefore not only focus on containing costs but also on improving the quality of the interaction between patients and physicians.

Declaration

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Conflict of interest: no competing interests.

References

- 1 OECD/WHO. *OECD and WHO Survey of Switzerland's Health System*. Paris, France: Organisation for Economic Co-operation and Development, 2006.
- 2 OECD. *OECD Health Data 2008*: OECD 2008 OECD publishing Paris, France.
- 3 Berchtold P, Peier K, Peier C. Erfolgreiche Entwicklung der Ärztenetze in der Schweiz. *Schweizerische Ärztezeitung*. *Schweizerische Ärztezeitung* 2008; **89**: 2038–41.
- 4 Schwenkgenks M, Preiswerk G, Lehner R, Weber F, Szucs TD. Economic efficiency of gate-keeping compared with fee for service plans: a Swiss example. *J Epidemiol Community Health* 2006; **60**: 24–30.
- 5 Miller RH, Luft HS. HMO plan performance update: an analysis of the literature, 1997–2001. *Health Aff (Millwood)* 2002; **21**: 63–86.
- 6 Newhouse RP, Mills ME, Johantgen M, Pronovost PJ. Is there a relationship between service integration and differentiation and patient outcomes? *Int J Integr Care* 2003; **3**: e15.
- 7 Barr DA. The effects of organizational structure on primary care outcomes under managed care. *Ann Intern Med* 1995; **122**: 353–9.
- 8 Kikano GE, Goodwin MA, Stange KC. Physician employment status and practice patterns. *J Fam Pract* 1998; **46**: 499–505.
- 9 Mehrotra A, Epstein AM, Rosenthal MB. Do integrated medical groups provide higher-quality medical care than individual practice associations? *Ann Intern Med* 2006; **145**: 826–33.
- 10 Ouwens M, Wollersheim H, Hermens R, Hulscher M, Grol R. Integrated care programmes for chronically ill patients: a review of systematic reviews. *Int J Qual Health Care* 2005; **17**: 141–6.
- 11 Minkman MM, Schouten LM, Huijsman R, van Splunteren PT. Integrated care for patients with a stroke in the Netherlands: results and experiences from a national Breakthrough

- Collaborative Improvement project. *Int J Integr Care* 2005; **5**: e14.
- ¹² Wensing M, Mainz J, Grol R. A standardised instrument for patients' evaluations of general practice care in Europe. *Eur J Gen Pract* 2000; **6**: 82–7.
- ¹³ Engels Y, Campbell S, Dautzenberg M *et al.* Developing a framework of, and quality indicators for, general practice management in Europe. *Fam Pract* 2005; **22**: 215–22.
- ¹⁴ Grol R, Dautzenberg M, Brinkmann H (eds). *The European Practice Assessment*. Gütersloh, Germany: Bertelsmann Stiftung, 2004.
- ¹⁵ Grol R, Wensing M, Mainz J *et al.* Patients in Europe evaluate general practice care: an international comparison. *Br J Gen Pract* 2000; **50**: 882–7.
- ¹⁶ Reichheld F. Learning from customer defections. *Harvard Bus Rev* 1996; **74**: 56–68.
- ¹⁷ Schuler M, Dessermonet P, Joye D. *Die Raumgliederungen der Schweiz: Swiss Federal Statistical Office*, 2005 Neuchatel Switzerland.
- ¹⁸ Rao M, Clarke A, Sanderson C, Hammersley R. Patients' own assessments of quality of primary care compared with objective records based measures of technical quality of care: cross sectional study. *BMJ* 2006; **333**: 19.
- ¹⁹ Perneger TV. Adjustment for patient characteristics in satisfaction surveys. *Int J Qual Health Care* 2004; **16**: 433–5.
- ²⁰ Rosenthal R, Rubin DB. Interpersonal expectancy effects: the first 345 studies. *Behav Brain Sci* 1978; **1**: 377–415.
- ²¹ Busato A, Kunzi B. Differences in the quality of interpersonal care in complementary and conventional medicine. *BMC Complement Altern Med* 2010; **10**: 63.
- ²² Wensing M, Vedsted P, Kersnik J *et al.* Patient satisfaction with availability of general practice: an international comparison. *Int J Qual Health Care* 2002; **14**: 111–8.
- ²³ van den Hombergh P, Kunzi B, Elwyn G *et al.* High workload and job stress are associated with lower practice performance in general practice: an observational study in 239 general practices in the Netherlands. *BMC Health Serv Res* 2009; **9**: 118 doi:10.1186/1472-6963-9-118.
- ²⁴ Grumbach K, Bodenheimer T. Can health care teams improve primary care practice? *JAMA* 2004; **291**: 1246–51.
- ²⁵ Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness. *JAMA* 2002; **288**: 1775–9.
- ²⁶ Rosenthal TC. The medical home: growing evidence to support a new approach to primary care. *J Am Board Fam Med* 2008; **21**: 427–40.
- ²⁷ Jaccard Ruedin H, Roth M, Bétrisey C, Marzo N, Busato A. *Offre et recours aux soins médicaux ambulatoires en Suisse*. Neuchatel, Switzerland: Schweizerisches Gesundheitsobservatorium, 2007.
- ²⁸ Ahlen GC, Mattsson B, Gunnarsson RK. Physician patient questionnaire to assess physician patient agreement at the consultation. *Fam Pract* 2007; **24**: 498–503.
- ²⁹ Weissman NW, Allison JJ, Kiefe CI *et al.* Achievable benchmarks of care: the ABCs of benchmarking. *J Eval Clin Pract* 1999; **5**: 269–81.
- ³⁰ Thompson JR. Invited commentary: Re: “Multiple comparisons and related issues in the interpretation of epidemiologic data”. *Am J Epidemiol* 1998; **147**: 801–6.