

# Does increased standardisation in health care mean less responsiveness towards individual patients' expectations? A register-based study in Swedish primary care

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## Abstract

**Objective:** We explore whether standardisation in health care based on evidence on group level and a public health perspective is in conflict with responsiveness towards individual patient's expectations in Swedish primary care.

**Methods:** Using regression analysis, we study the association between patient views about providers' responsiveness and indicators reflecting provider's adherence to evidence-based guidelines, controlled for characteristics related to providers, including patient mix and degree of competition facing providers. Data were taken from two Swedish regions in years 2012 and 2013.

**Results:** Patients' views about responsiveness are positively correlated with variables reflecting provider's adherence to evidence-based guidelines regarding treatment of elderly and risk groups, drug reviews and prescription of antibiotics. A high overall illness, private ownership and a high proportion of all visits being with a doctor are positively associated with patient views about responsiveness. The opposite relation was found for a high social deprivation among enrolled individuals and size of practice. There was no systematic variation with respect to the degree of competition facing providers.

**Conclusion:** Results suggest that responsiveness towards individual patient expectations is compatible with increased standardisation in health care. This is encouraging for health care providers as they are challenged to balance increased demands from both patients and payers.

## Keywords

Standardisation in health care, responsiveness, primary care

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## Introduction

Increasingly, health care providers are supposed to act in accordance with professionally determined evidence-based clinical guidelines, as well as performance targets set by payers aiming at greater health system performance.<sup>1–3</sup> For the individual health care provider, for example, a general practitioner, requirements to comply with such increased standardisation in health care may go against what is expected from the individual patient. Payers, in their role as policy-makers focusing on population needs, and citizens, in their role as patients seeking treatment for their individual problems, can be assumed to have somewhat different expectations and rationales for assessment of provider activities.

Economic theory about the behaviour of individuals in health care suggests that patients assess providers based on parameters that they can observe themselves.<sup>4</sup> Empirical

beliefs, as opposed to facts or comparative information, guide individual views and choices of providers. Empirical beliefs might be appropriate with respect to fulfilling objectives related to accessibility and providers being responsive to its users. Responsiveness here refers to consideration of and respect for the expectations and preferences of patients.<sup>5</sup> Personal experiences, reputation and recommendations from

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friends and relatives might be good enough or even better than comparative information about providers to guide individuals choice with respect to objectives related to responsiveness.<sup>6,7</sup> The extent to which providers offer services that is fulfilling such individual qualities related to responsiveness is visible to individuals in their contacts with providers.

To what extent providers offer services that are of high medical quality and whether important objectives at population level related to effectiveness, efficiency and equity are reached is usually not visible to individuals in their contacts with providers. Even if such visibility exists, one can assume that individual patients (at the point of service) are less oriented towards accountability of providers towards objectives at the population level. For example, patients may perceive physicians willingness to prescribe antibiotics as a sign of good quality and responsiveness of care.<sup>8</sup> What may seem rational and an indicator of quality from an individual patient perspective may thus go against quality from a population perspective.<sup>9</sup> Fogelberg<sup>10</sup> found that increased provider competition in Swedish primary care stimulated an increase in the prescription of antibiotics. This increase was not accompanied by a corresponding reduction in sick leave. One interpretation is that although increased prescription of antibiotics may be perceived as an indicator of quality and responsiveness of care among individual patients, it does not correspond to an actual increase in the quality of care from a medical and population perspective. In light of the increase in prevalence of multi-resistant bacteria, a restrictive use of antibiotics is a common theme in clinical guidelines.<sup>11</sup>

From the perspective of providers, evidence-based clinical guidelines can be regarded as a way of regulating the work by health care professionals, limiting their individual professional autonomy and actions.<sup>12</sup> Moreover, it might be difficult for health care providers to adhere to measures aiming at increased standardisation of health care on one hand and responsiveness towards individual patient needs and expectations on the other hand. Bodenheimer<sup>13</sup> argues that adherence to evidence-based guidelines draws attention from responsiveness towards patients, and Campbell et al.<sup>14</sup> find that evidence-based guidelines direct focus towards what is optimal for groups of patients rather on individual patients. This may also partly explain the gap between guidelines and clinical practice. A recent Swedish study concluded that national guidelines have had limited effects so far and that differences in local management practices and a lack of coordination among different care givers are still common.<sup>15</sup>

Swedish primary care is an interesting context to study the potential conflict between increased standardisation and responsiveness towards patient's expectations. On one hand, freedom of choice of primary care provider for individual citizens with limited restrictions has been mandatory since 1 January 2010, with payment to providers following the choice of individuals.<sup>16</sup> Information about patient perceptions about the quality of care as measured in a National Patient Experience (NPE) survey is also used to hold providers to account for

their services. On the other hand, providers are subject to national and local evidence-based guidelines and performance targets to increase their performance, focusing on efficiency and effectiveness at group level.<sup>17,18</sup>

Accountability, together with priority setting and performance monitoring, is a key component of the processes of governance in the context of health systems.<sup>2</sup> Performance monitoring is about promoting transparency in the health system by the compilation and reporting of information about providers. One important purpose is to promote transparency throughout the health system to enable patients and payers to assess and hold providers to account for their activities. From the perspective of providers, it might be difficult to provide services that align the desired performance as reflected in measures influenced by patients' expectations with increased pressures to act in line with performance targets reflecting payers' and policy makers' identified population needs.

## Purpose

We explore whether standardisation in health care based on evidence on group level and a public health perspective is in conflict with responsiveness towards individual patient's expectations in Swedish primary care.

## Methods

The study is based on register data from two Swedish county councils for the years 2012–2013: Region Skåne (RS) with 1.3 million inhabitants and Västra Götalandsregionen (VGR) with 1.6 million inhabitants. There were about 150 primary care practices serving 1.3 million inhabitants in RS and 200 practices serving 1.6 million inhabitants in VGR. Together, the practices in these two regions represented about 30% of all primary care practices in Swedish primary care. The size of practices included in the analysis varies between 1000 and 22,000 with an average size of 8200 (standard deviation (SD)=3700) enrolled individuals. One-fourth of all practices in the study is located in a large city and 41% is privately owned.

We analyse the correlation between the proxy variables representing measures to standardise care (three variables) and patient satisfaction, while controlling for characteristics and location of practices (seven variables), year of measurement (one variable) and degree of competition facing practices (two variables). In our first regression model, all explanatory variables were included. Based on the results from this first analysis, non-significant variables were excluded and different models were analysed (method=backward). Variables in the final model presented are included only when significant at 5% level ( $p < 0.05$ ). The choice of final model was done with respect to the model with the highest value of explained variance of the dependent variable (adjusted  $R^2$ ), controlled for multicollinearity between

independent variables. Multicollinearity between independent variables was assessed by checking the tolerance and the variance inflation factor (VIF) values for each independent variable in the model. Tolerance values below 0.25 and VIF values greater than 4 were not accepted.<sup>19</sup> No variables were excluded due to multicollinearity. The data collected were coded and analysed using SPSS 22.0.

## Empirical material

Since 2009, patients' perceptions about the quality in primary care are measured annually through a national patient survey (NPE). The survey is administered by mail to a random sample of patients having visited a provider during the period September–October.<sup>20,21</sup> Results from one question from the surveys were used to measure responsiveness towards individual patients' expectations for doctor visits: 'Was your need of care adequately taken care of?' (see Appendix 1). The dependent variable was the proportion of patients who answered 'Yes'. The variable could take any value between 0 and 100.

In RS and VGR, performance indicators are used to follow up and evaluate providers in primary care with regard to adherence to evidence-based guidelines. Information about the performance of providers is compiled in registers and was used to derive variables representing the level of standardisation of health care. Since the two county councils use slightly different indicators to assess the adherence to clinical guidelines, we constructed proxy variables representing measures to standardise health care. The approach to this was to divide all practices in each county council in 10 groups with respect to their performance according to indicators that were considered to be comparable between the two county councils. The variables could thus take any value between 1 and 10, where 10 indicates that the practice have a better adherence than 90% of all practices (see Appendix 2). Three variables representing standardisation in health care were included:

- *Adherence to guidelines on being restrictive in the prescription of antibiotics.* The variable can take any value between 1 and 10, where 10 indicates that the provider belongs to the tenth of the practices most restrictive in the prescription of antibiotics.
- *Adherence to guidelines on performing drug reviews.* The variable can take any value between 1 and 10, where 10 indicates that the provider belongs to the tenth of the practices being most willing to perform drug reviews.
- *Adherence to guidelines on treatment of elderly and risk groups.* The variable can take any value between 1 and 10, where 10 indicates that the provider belongs to the tenth of the practices being most willing to avoid prescription of harmful drugs to elderly and to administer vaccination for seasonal flu to risk groups.

Seven variables were used to control for ownership, location, patient mix and size of practices:

- Size of practice, defined as the number of enrolled individuals at each primary care practice.
- If the provider is private or public (0/1 where 1=private).
- The level of overall illness among enrolled individuals, as measured by average adjusted clinical groups (ACG). ACG quantifies morbidity by grouping individuals based on their age, gender and the constellation of diagnoses over a defined time period.<sup>22</sup> Higher number indicates worse average level of illness.
- The level of socioeconomic deprivation among enrolled individuals, as measured by care-need index (CNI). CNI is a measure of social deprivation related to seven factors, for example, education and unemployment.<sup>23</sup> High is defined as the fifth of the practices with the highest average socioeconomic deprivation (0/1 where 1=high socioeconomic deprivation).
- Doctor visits as a proportion of all visits among enrolled individuals. Higher number indicates a larger proportion of all visits being with a doctor.
- Practice located in large city, defined as located in Malmö/Göteborg (0/1 where 1=yes).
- Practice located in RS or VGR (0/1 where 1=RS).

Two variables were used to control for the degree of competition facing providers:

- The size of market for practice 1 can take any number. It is defined as the sum of all enrolled individuals in all practices within a certain range (5 km in this study) from practice 1, including practice 1. Higher number indicates larger market.
- The Herfindahl–Hirschman Index (HHI) is used as a proxy for the degree of competition facing each practice. It is a measure of the size of firms in relation to the industry and an indicator of the amount of competition among them. It can take any number between 0 and 1. Higher number indicates less competition. In this study, it is defined as the sum of the squares of the market shares of all practices within the market, where the market shares are expressed as fractions. Higher number indicates less competition. The share of market for practice 1 can take any number between 0 and 1. It is defined as the number of enrolled individuals at practice 1 in relation to the size of the market for practice 1.

## Results

In Table 1, the final model with patient views about responsiveness as the dependent variable is shown (see Appendix 3 for the full regression model). The level of responsiveness (defined as the proportion of patients who answered 'Yes' to

**Table 1.** Final regression model with patient views about responsiveness as dependent variable.

Explanatory variable	$\beta$ (standardised)	Significance (p value)
Adherence to guidelines, drug reviews	0.129	0.000
Adherence to guidelines, treatment of elderly and risk groups	0.097	0.008
Adherence to guidelines, restrictive prescription of antibiotics	0.072	0.043
Size (number of enrolled individuals)	-0.119	0.001
Type of owner (0 = county council/1 = private)	0.155	0.000
Overall illness (average ACG)	0.165	0.000
Socioeconomic deprivation (0 = low CNI/1 = high CNI)	-0.290	0.000
County council (0 = VGR/1 = RS)	0.232	0.000
Proportion of visits with a doctor	0.137	0.001
Constant		0.000
Adjusted R <sup>2</sup>	0.264	
Observations (number of providers)	648	

RS: Region Skåne; VGR: Västra Götalandsregionen; CNI: care-need index; ACG: adjusted clinical groups.

the question ‘Was your need of care adequately taken care of?’) varied between 15.6% and 92.3% across the practices with an average of 68.5% (SD=9.3%).

Systematic variation (significant at the 5% level) was found for all variables representing measures to standardise care. Patient views about responsiveness are positively correlated with providers who were more willing to adhere to evidence-based guidelines regarding treatment of elderly and risk groups, performing drug reviews and restrictive prescription of antibiotics in the model.

Five variables used to control for characteristics of practices and patient mix are statistically significant in the model. Private ownership is positively associated with perceptions about responsiveness. A high proportion of all visits being with a doctor was also positively associated with patient perceptions about responsiveness. On average, doctor visits as a proportion of all visits among enrolled individuals was 49.9% (SD=15.6%). Size of practice, defined as the number of enrolled individuals, was negatively associated with patient perceptions about responsiveness.

Concerning patient mix, both the level of overall illness and the level of socioeconomic deprivation, is statistically significant in the model. The fifth of the practices with the highest socioeconomic deprivation among enrolled individuals was associated with perceptions of lower satisfaction among patients in the model. The opposite was found for the overall illness of individuals. A higher level of overall illness among enrolled individuals is associated with better views of responsiveness in the model.

No systematic variation was found with respect to location in a large city or degree of competition among practices. Providers in one of the county councils (RS) were associated with better views about responsiveness.

## Discussion

The results in this study suggest that primary care providers who are responsive to expectations of individual patients

also are responsive to expectations in terms of adherence to evidence-based guidelines. This is encouraging as providers are faced with the task of satisfying expectations from both patients and governments in their role as payer and policy maker. Patients, providers and governments commonly perceive the quality of care differently and have somewhat different expectations on services provided.<sup>9</sup> Payers and policy makers typically assess providers from a population perspective rather than the perspective of satisfying individual patients.

Patient views about responsiveness were positively correlated with variables reflecting increased standardisation in health care, that is, willingness to adhere to guidelines about drug treatment to elderly, restrictiveness in the prescription of antibiotics and use of drug reviews. Hence, the results indicate that providers who are successful in satisfying patients’ expectations also tend to be successful when it comes to adhering to measures by governments aiming at increased standardisation of health care. The findings challenge views of a trade-off between standardisation in health care based on evidence on a public health perspective and responsiveness towards individual patient’s expectations. Previous research in Swedish primary also suggests that there is no conflict between a higher productivity, another quality seen from a population perspective, and more satisfied patients.<sup>24</sup> There are few comparable studies from the primary care setting. However, one study in the United Kingdom indicates that patients’ subjective views about quality are positively associated with more objective clinical indicators of quality.<sup>25</sup> In another recent study from the United Kingdom of the choices of 3.4 million individuals among almost 1000 family doctor practices, it was concluded that individuals are likely to choose practices with higher reported quality.<sup>26</sup> Jointly, these previous studies as well as our findings indicate that individual patient perceptions of the quality of care correlates with clinical quality as measured by performance indicators.

This study also adds to previous empirical studies about what factors correlates with patient views about responsiveness. Similar to a previous Swedish study based on data from the NPE survey,<sup>27</sup> our results show that there is systematic variation in patient views with respect to both organisational and structural factors, including the patient mix. A high overall illness and a high proportion of all visits being with a doctor were associated with higher patient satisfaction, whereas the opposite was found for high social deprivation among enrolled individuals. A study from the United Kingdom also shows that the outcome of general practices according to performance measures based on a NPE survey is affected by the level of social deprivation among enrolled patients.<sup>28</sup>

Similar to previous research from both Sweden and the United Kingdom, we found a negative systematic variation with respect to the size of the practice.<sup>27,29</sup> Moreover, in this study, private providers were found to be associated with perceptions of better responsiveness compared to public providers, whereas such a relationship could not be confirmed in the previous Swedish study. We found no systematic variation in patient views about responsiveness with regard to the degree of competition facing providers, as measured by concentration index and size of market. However, Pike<sup>25</sup> concludes that competition in the primary care setting in England is associated with a higher level of quality as measured both for an indicator of clinical quality and patient views about quality.

Further research, not least including other quality indicators, is needed to confirm the conclusion in this study and to analyse any causal effect of adherence to evidence-based guidelines and responsiveness of care. The study has several limitations: First of all, standardisation of health care was measured using proxy variables. The choice of variables was limited by the availability of information about adherence to guidelines in Swedish primary care across county councils. It should be noted that all three variables on adherence to guidelines in this study are concerned with drugs. Moreover, one measure only concerns elderly and risk groups. Further research should ideally include variables representing other dimensions of standardisation of health care. A second limitation in this study is that no variable reflecting age of enrolled individuals was included. The variable used to measure overall illness, ACG, is composed of age, diagnoses and gender. The higher patient satisfaction associated with higher overall illness may also reflect that elderly patients are more satisfied since the number of diagnoses and the number of health care visits commonly increases with age. Research based on findings from the general practice access survey in England concludes that older patients are more satisfied with primary care.<sup>29</sup>

A third limitation is that due to limited availability of data about individual patients, the analysis is based on information about perceptions at the practice level. Improved access to data on the individual patient level would enable for more advanced statistical methods, similar to previous research from the

United Kingdom,<sup>28,29</sup> and to gain a deeper understanding about what factors matters for patients' perceptions about the quality of primary care also in the Swedish setting. Moreover, we have no information about the reason for visiting a doctor among those patients who answered the survey about perceptions of the quality of care relative to all patients who made a visit during the survey period. Finally, the variables reflecting organisational and structural differences included in the analysis are only some of the factors of relevance for patients' views about the quality of primary care services. Information about skills among staff, their behaviour and time devoted to patients is not included. Neither is information about expectations and preferences related to primary care among individual patients.

The results from this study are encouraging from the perspective of providers' ability to balance demand for responsiveness from individual patients and compliance to evidence-based guidelines. However, a development towards standardised care may be problematic in the long run. Such measures can be regarded as a way of limiting health care professionals' individual autonomy.<sup>12,17</sup> Measures intended to control the behaviour of individuals could lead to negative consequences, especially where individuals have strong professional roles and are motivated by intrinsic rather than extrinsic factors. There is a risk that intrinsic motivation is crowded out if measures aimed at controlling the behaviour of individuals become too strong.<sup>30</sup> Health care then becomes protocol driven rather than driven by what is considered to be the best solution based on individual patient needs and expectations. Besides negative consequences for the motivation among health care staff, this could erode the trust in the health care system among individual patients and the population. The delivery of care should always, even where driven by protocols, consider the needs and expectations of the individual patients. The effects of increased standardisation of health care on professional autonomy and motivation as well as trust from the population and individual patients are relevant areas for further research.

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## Appendix I

### The National Patient Experience Survey

Since 2009, patients' perceptions about the quality in primary care in Sweden are measured annually through a National Patient Experience (NPE) Survey. The survey is administered by mail to a random sample of patients having visited a practice (250–300 patients per practice) during the

National Patient Experience Survey (NPE) 2009–2013, doctor visits in Västra Götalandsregionen (VGR) and Region Skåne (RS).

	2009	2010	2011	2012	2013
Number of respondents, Region Skåne	16,320	16,669	15,368	22,210	22,377
Response rate (%)	58	56	54	52	52
Number of practices, Region Skåne	145	150	147	149	150
Average size (enrolled individuals)	8475	8563	8495	8410	8530
Number of respondents, Västra Götaland Region	15384	22010	20357	19988	19700
Response rate (%)	56	57	53	52	51
Number of practices, Västra Götaland Region	141	195	195	197	198
Average size (enrolled individuals)	7557	7837	7970	7958	8097

period September–October. There is one version of the questionnaire for patients having visited a nurse and one for patients having visited a doctor. The survey includes 54 questions related to perceived quality of the provider, that is, 7 regarding availability, 5 regarding the reception at the facility, 22 regarding the actual doctor/nurse visit, 5 regarding lab and other medical tests, 9 regarding the overall impression and 6 about background characteristics of the respondent. In this study, the results from one question ‘Was your need of care adequately taken care of?’ in the survey for doctor visits are used to measure responsiveness towards patients in the two regions.

## Appendix 2

### Constructing proxy variables representing measures to standardise care

Since the two county councils use slightly different indicators to assess the adherence to clinical guidelines, we constructed proxy variables representing measures to standardise health care. The indicators differ in terms of principle for measurement and in content. In Västra Götalandsregionen (VGR), the indicators are presented as a number of completed or avoided tasks as a proportion of the targeted number for each measure, that is, a number between 0 and 1. In Region Skåne (RS), the indicators are presented as a number of completed or avoided tasks per 1000 enrolled patients in the specific patient population, that is, a number between 0 and 1000. The approach to constructing the variables was to divide all providers in each county council in 10 groups with respect to their performance according to indicators that were considered to be comparable between the two county councils. Separate distributions for the 2 years was used. Three variables were constructed:

- *Adherence to guidelines about being restrictive in the prescription of antibiotics:* The variable can take any value between 1 and 10, where 10 indicates that 90% of providers are more willing to prescribe antibiotics to patients. The indicator used to assess providers in RS measures the overall willingness to prescribe antibiotics among patients, where lower values indicate higher quality. The indicator used in VGR measures the willingness to prescribe chinolones for urinary tract infections, where lower values indicate higher quality.
- *Adherence to guidelines about performing drug reviews:* The variable can take any value between 1 and 10, where 10 indicates that the provider belongs to the tenth of the providers being most willing to perform drug reviews. The indicator used to assess providers in RS measures the willingness to perform drug reviews among all patients, where higher values indicate higher quality. The indicator in VGR measures the willingness to initiate drug reviews among elderly, where higher value indicates higher quality.
- *Adherence to guidelines about treatment of elderly and risk groups:* The variable can take any value between 1 and 10, where 10 indicates that the provider belongs to the tenth of the providers being most willing to adhere to clinical guidelines. The indicator used to assess providers in RS measures the willingness to be restrictive in the prescription of possible harmful drugs to elderly, where lower values indicate higher quality. The indicator used in VGR measures the willingness to adhere to guidelines in vaccination for seasonal flu among elderly and patients with heart disease and chronic obstructive pulmonary disease (COPD), where higher values indicate higher quality.

## Appendix 3

### Full regression model

Full regression model with patients views about responsiveness as dependent variable.

Explanatory variable	$\beta$ (unstandardised)	Standard error	$\beta$ (standardised)	Significance (p value)	Tolerance	VIF
Adherence to guidelines, drug reviews	0.004	0.001	0.130	0.000	0.863	1.159
Adherence to guidelines, treatment of elderly and risk groups	0.003	0.001	0.096	0.009	0.844	1.184
Adherence to guidelines, restrictive prescription of antibiotics	0.002	0.001	0.072	0.044	0.885	1.130
Size (number of enrolled individuals)	-2.951E-6	0.000	-0.119	0.001	0.845	1.183
Type of owner (0=county council/1=private)	0.029	0.007	0.156	0.000	0.746	1.340
Overall illness (average ACG)	0.120	0.028	0.166	0.000	0.766	1.306
Socioeconomic deprivation (0=low CNI/1=high CNI)	-0.067	0.008	-0.291	0.000	0.828	1.207
County council (1=RS/0=VGR)	0.043	0.007	0.232	0.000	0.729	1.371
Situated in two largest cities (0=no/1=yes)	0.001	0.008	0.006	0.873	0.782	1.280
Market size, 5 km range from practice	8.415E-9	0.000	0.009	0.850	0.547	1.827
Competition (HHI)	0.003	0.012	0.013	0.781	0.543	1.842
Proportion of visits with a doctor	0.082	0.025	0.136	0.001	0.669	1.496
Year (0=2012/1=2013)	-0.006	0.006	-0.033	0.327	0.996	1.004
Constant	12.724	12.493		0.309		
Adjusted R <sup>2</sup>			0.260			
Observations (number of practices)			645			

HHI: Herfindahl–Hirschman Index; RS: Region Skåne; VGR: Västra Götalandsregionen; CNI: care-need index; ACG: adjusted clinical groups; VIF: variance inflation factor.