

General practice in Gloucestershire, Avon and Somerset: explaining variations in standards

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SUMMARY. Variations in standards are found in all health services. The method and amount of funding are thought to be important reasons for these variations. A cross sectional survey of all general practices in three counties in south west England was undertaken in order to explain variations in the level of development. A development score for each practice was calculated. There was wide variation in standards as described by the level of development. Multiple regression analysis showed that being a training practice, having a practice manager, the partners having a younger mean age, a larger total number of patients registered with the practice and a lower Jarman underprivileged area score were all independently related to a higher level of practice development. In addition, the responsible family health services authority was also related to the level of development. A combination of professional factors such as the decision to become a training practice, environmental factors such as the family health services authority or the underprivileged area score and economic factors reflected in the total list size determine the level of practice development. The most easily corrected factor is the employment of a practice manager. It is suggested that differences in standards in general practice may be increased rather than decreased by the fundholding scheme.

Keywords: working practice standards; quality in general practice; practice organization.

Introduction

STANDARDS are reported to vary widely in all health services, and general practice in the United Kingdom is no exception.^{1,3} This variation must be viewed in the light of inequalities in health between social classes and anxieties that the quality of primary care might be least satisfactory in areas where the health care needs of the local population are greatest. Variations in the quality of general medical services were acknowledged by the government in its white paper *Promoting better health* which introduced a programme for improving primary health care.⁴ One stated objective of these proposals and the subsequent new contract for general practitioners⁵ was to reduce variability by raising standards nearer to those of the best practices.

Several explanations for these variations in standards have been suggested. Bosanquet and Leese found that larger partnership size had a positive effect on the decision to introduce innovation, while an older mean age of the partners and the presence of an Asian partner were less likely to be associated with the decision to innovate.⁶ They also found that practices with a low income had fewer resources and so had little incentive to invest.⁷ Butler and Calnan found that the doctor's list

size was not related to standards and performance in the provision of services when this was between 1500 and 3000.⁸ However, there are methodological problems associated with this type of research because the standards for general practice are uncertain, different indicators may be used, and the assessment of the process and outcome of care is difficult. Until there are adequate and acceptable measures of process and outcome that can be applied by a large sample of doctors, utilization data and studies of practice structure are the only alternative.

General practice is at present undergoing rapid change. The new contract for general practitioners was intended to be more closely related to performance, to give patients more information and choice and to provide specific requirements of good general practice and a strengthened relationship between general practitioners and the new family health service authorities.⁵ New financial incentives have been introduced for achieving targets for immunizations and cervical cytology screening in specific patient populations, along with payment for other health promotion activities. A completely new funding arrangement for some larger general practices was introduced in April 1991 together with indicative drug budgets for all general practitioners. If developments in the organization of services are to be effective at improving standards the impediments to development in general practice need to be understood. In addition, when changes are introduced, it is necessary to monitor their effects. A study was therefore undertaken in the south west of England to explore the reasons for variation in the level of development in local general practices and to compile a profile of general practice in the area before the introduction of the new contract so that a similar study in several years time might reveal some of the changes brought about.

Method

The practices included in the study were those on the lists of the Gloucestershire, Avon and Somerset family health services authorities. Cross boundary practices were excluded when the responsible family health services authority was not one of these three. Each practice was sent a questionnaire in February 1990. Non-respondents were sent a second questionnaire two weeks later, with those still not replying after a further three weeks being reminded by a telephone call. Any replies received after the end of March 1990 were excluded as the new contract had by then come into force. The questionnaire and covering letter were addressed to only one named partner in each practice. This partner was identified by allocating a number to each doctor in each practice according to the order in which their names were listed in the partnership details in the family health services authority register, and then consulting a table of random numbers.

Questionnaire and development score

The questionnaire comprised 76 main items divided into eight categories: equipment, clinical activities, the team, records, organization, premises, availability and clinics. Questions were chosen to include as many aspects of practice as possible in order to obtain a range of replies that would differentiate between developed and less developed practices. The questionnaire was based on one used in a previous survey carried out in 1982,⁹ but it was extensively modified to include additional aspects of prac-

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© *British Journal of General Practice*, 1992, 42, 415-418.

tice. In order to test its acceptability and to ensure that it contained questions on most features of practice it was sent to a small pilot sample of general practitioners. For this study the developed practice was defined as one that offers a wide range of facilities and staff thereby showing willingness to introduce new ideas.

A development score was determined for each practice. If a particular feature of practice was reported a score of one was allocated. Where several options were possible, for example for family planning where replies might indicate that no family planning was offered, only the oral contraceptive was offered, or that a complete service was offered, the possible score ranged from zero to two or three, depending on the number of alternative answers. The development score was the total of these scores and the maximum was 95.

Explanation of variation in score

In order to explore the possible explanations for variations in the development score a stepwise multiple regression analysis was undertaken using *SPSSX* (statistical package for the social sciences, version 3.0). Multiple regression expresses the relationship between a dependent variable and a set of explanatory or independent variables and indicates which explanatory variable appears to have most influence on the dependent variable.¹⁰ The mean age of the partners and partnership size have been shown to be associated with the decision to innovate,⁶ and so the mean age of the partners, number of partners, number of patients per partner, and total practice list size, were all selected as explanatory variables. Systematic practice management might enable a practice to introduce new developments, and the presence of a practice manager was therefore included as an explanatory variable. Being selected as a training practice has been shown to be associated with practice development,⁹ so this was also included as an explanatory variable. While detailed information about practice populations was not included, three explanatory variables were selected that would reflect some aspects of population characteristics. These were, at the local level the Jarman underprivileged area score¹¹ for the ward in which the practice was located, then more widely whether the respondent classified the practice as being in an inner city, urban or rural area, and finally on a broad scale the responsible family health services authority. In addition, whether the premises were owned by the partnership or rented privately or from a district health authority was included as an explanatory variable, as participation in the cost rent scheme has been used previously as an indicator of an innovative practice.⁶ The underprivileged area scores were provided by the family health services authorities and were for the wards in which the practices were situated as it was not possible to calculate the scores for individual lists of patients. The questionnaire asked for the partners' ages in three bands: 25–39 years, 40–59 years, and 60–64 years. The mean age was calculated using the midpoint of these age bands and the total number of partners in each. The responsible family health services authority was not a binary variable and so for the regression analysis was converted into a series of dummy variables. While information about the explanatory variables, excluding the underprivileged area score, was sought by the questionnaire, these variables were not included in the calculation of the development score as a variable cannot be both independent and explanatory simultaneously.

Results

A total of 324 practices were identified for the study. Two of these were found to have been absorbed into other partnerships following the retirement of single-handed practitioners and were therefore excluded. Of the remaining 322 practices, 287 return-

ed usable replies by the end of March 1990, a response rate of 89.1%. Only two practices refused to participate, while 33 failed to reply. The highest underprivileged area score for a practice in this study was 56, while the lowest was –34. The mean underprivileged area score for the non-respondents was –0.1, and their mean number of partners 2.9. For the respondents these figures were 0.9 and 3.5, respectively but the differences were not significant (Mann Whitney *U* test). There was no significant difference in response rate from the three family health services authorities. The mean number of patients per partner in the responding practices was 1815.

The percentage of practices reporting that they had the features in the questionnaire are shown in Table 1. Almost all practices had a peak flow meter, vaginal speculum, sterile dressings and a typewriter, offered minor surgery, cervical screening and antenatal and immunization clinics, and had an attached district nurse, health visitor and midwife, and a practice nurse. Despite this evidence of multidisciplinary teams only 60% of practices had team meetings. Some features were particularly uncommon, such as personal lists of patients, patient participation groups and marriage counsellors. The least common clinic was for smoking cessation.

The development score for the 287 responding practices varied from 14 to 74, with a median of 52.0. The distribution of scores was not quite normal, being slightly skewed towards the higher development scores.

The results of the multiple regression analysis are shown in Table 2. Whether or not the practice had a trainee was the most important explanatory variable, accounting for 33% of the variation; training practices were more developed than non-training practices. The second most important explanatory variable was the employment of a practice manager, those practices employing a manager being more developed. The next explanatory variable was the mean age of the partners; the older the mean age of the partners, the less developed was a practice. The total list size of the practice was the next most important explanatory variable; practices were more developed if they had a greater number of patients. The fifth explanatory variable was the underprivileged area score for the practice address, practices with higher scores being less developed. The final explanatory variable was the responsible family health services authority. The four other variables, number of patients per partner, number of partners and location and ownership of the premises failed to offer any additional explanation for the variation in the development score. The significant variables explained 42% of the variation in development scores.

Discussion

The limitations of this study must be considered. The study practices are not a national random sample and it would be inappropriate to make wide generalizations from the findings. The study area included one large city, Bristol, which although generally prosperous does have some deprived areas. The range of underprivileged area scores for practices in this study was wide. The mean score for city and east London, the highest scoring family health services authority in England and Wales, is reported as 53, and Surrey, the lowest, as minus 31,¹¹ although individual practices within these authorities will exceed these extremes. There are dangers in studying general practice in one area and then generalizing from the results obtained, as demonstrated when studying the particular problems of inner cities.¹ Therefore, the findings reported here should be seen as an indication of the issues that may be important in other areas rather than as explanations for variation in practice throughout

Table 1. Percentage of practices that had the features included on the questionnaire.

% of practices with feature (n = 287)							
Equipment		Clinical activities		Team		Records	
Sterile dressings	99.7	Screening:		District nurse	97.5	Prescription card	68.9
Vaginal speculum	99.7	Cervical	94.7	Health visitor	97.2	Summary cards:	
Peak flow meter	99.6	Blood pressure	79.7	Practice nurse	95.8	1-50% of notes	44.4
Typewriter	98.6	Developmental	76.8	Midwife	95.4	51-94%	33.1
Proctoscope	88.1	Rubella	48.9	Practice manager	77.5	95% +	14.3
Dictaphone	85.7	Geriatric	43.0	Psychiatric nurse	62.3	Diagnostic index:	
Photocopier	75.9	Minor surgery	87.1	Medical student	60.2	1-3 diseases	10.6
Electrocardiogram	72.0	Contraception:		Geriatric nurse/health		4+	39.0
Glucose meter	66.1	Pill, diaphragm and		visitor	50.0	Age-sex index:	
Computer	58.7	IUCD	58.7	Trainee	43.9	Used for 1 activity ^a	19.9
Electric cautery	35.0	Pill only	8.6	Social worker	34.2	2	18.9
Microscope	27.3	Pill and diaphragm	5.7	Clinical psychologist	15.8	3+	23.1
Audiometer	26.2	Intrapartum care:		Marriage counsellor	12.3	A4 records	14.7
Sigmoidoscope	13.3	GPU only	23.8				
		GPU and home	22.6				
		Home only	10.7				
Organization		Premises		Availability		Clinics	
Practice leaflet	84.6	Ownership:		Appointment system:		Antenatal	93.0
Library	82.8	Practice owned	63.4	At all sessions	75.7	Immunization	90.2
Team meetings	59.8	Private rental	11.3	Some	21.5	Developmental	73.0
Clinical policies	56.6	DHA rental	25.4	None	2.8	Diabetic	42.7
Educational meetings	47.6	Type:		Patients seen per hour:		Blood pressure	31.8
Audit	39.5	Purpose built	55.2	10+	11.3	Obesity	22.0
Workload analysis	32.5	Converted	44.8	8-9	45.0	Asthma	21.7
Research:		Location:		6-7	43.6	Smoking	13.6
Collaborative	9.1	Inner city	8.1	Out of hours: ^b			
Individual	14.3	Urban	55.1	Deputizing service	20.6		
Formulary for:		Rural	36.8	Practice rota	55.9		
1 disease	2.1			Inter-practice rota	45.8		
2+	17.8			Radio pager	81.1		
Dispensing practice	18.2			Radio phone	21.3		
Patient participation				List type:			
group	9.8			Shared list	60.5		
				Partly personal	24.3		
				Personal	15.2		

n = total number of practices; some practices did not answer all the questions. IUCD = intrauterine contraceptive device. GPU = general practice unit. DHA = district health authority. ^a For example, a recall programme. ^b Practices could select more than one option.

Table 2. Beta (partial regression) coefficients with 95% confidence intervals (CI) and squares of the multiple correlation coefficients of the explanatory variables in the multiple regression analysis.

Explanatory variable	Beta coefficient (95% CI)	Cumulative R ²
Not a training practice	-12.0 (-14.3 to -9.6)	0.33
Has a practice manager	4.1 (1.6 to 6.6)	0.36
Older mean age of partners	-0.2 (-0.4 to 0.1)	0.38
Larger total practice list size	3.9 × 10 ⁻⁴ (1.1 × 10 ⁻⁴ to 6.8 × 10 ⁻⁴)	0.40
Higher underprivileged area score	-0.1 (-0.01 to -0.2)	0.41
Which family health services authority	2.5 (0.1 to 4.9)	0.42

The level of significance for the regression was set at P < 0.05. The beta scores are constants used in the regression equation to weight the contribution of each explanatory variable to the development score. They are the amount by which the development score changes when the explanatory variable changes by one unit and all the other explanatory variables remain constant. The intercept, a constant included in the regression equation, was 62.5.

the UK. The high response rate to the questionnaire demonstrates that it was acceptable to general practitioners. The questionnaire did not ask respondents for information about practice income or the personal attitudes of the partners towards innovation. The questions were chosen to include as many features of practice as possible, but some could be seen as being more important in practice development than others. Although a system of allotting specific weights to each feature according to perceived importance would appear to be one solution to this problem, any weighting system runs the risk of being arbitrary and idiosyncratic. A regression analysis was undertaken using a simple weighting system for calculating the development scores, but this did not add to the findings and is not reported here.

The results of this study confirm the variation in standards between practices as described by the level of development. While this variation has been shown before, this is the first time that the complete distribution of levels of development has been precisely described. The range from the most developed practice to the least developed was surprisingly wide. If family health services authorities and medical audit advisory groups are to assist in the development of general practice they will need to target efforts towards the least developed practices and to understand the particular factors that influence development in their areas. Information of the type obtained in this study will assist in this task. If this information were standardized, there would

be a data set for general practice that would permit comparison of one family health services authority with another, or between individual practices within a family health services authority.

Bosanquet and Leese assessed how innovative practices were by their participation in the cost rent scheme, the vocational training scheme and their employment of a practice nurse.^{6,7} The present study confirms that being a training practice does indicate a willingness to innovate, but 96% of practices employed a nurse so in 1990 this could not be used to differentiate between practices. Ownership of the practice premises also failed to explain variations in the level of development.

The vocational training scheme imposes particular standards on certain aspects of training practices, which in the south west include practice facilities, the practice team and clinical activities. When combined with a regular practice inspection before continued approval to train is granted, it is not surprising that training provides a strong stimulus to practice development. The decision to undertake training is an example of innovation which reflects the attitude of a practice towards development. Investigation of the reasons why practices seek approval for training may help explain the more general decision to develop services.

The decision to employ a practice manager may itself be a sign of an innovative practice, as the process of development is then made easier because the general practitioners do not have to undertake all the organization of new developments themselves. The role of practice management has received much attention in recent years.¹² This study has shown that after training practice status a practice manager is the most important variable in explaining the level of practice development. In this part of the UK it is more important than the age of the partners, the total list size or the underprivileged area score. Not every practice can undertake training, but every practice could have a designated manager, and this study suggests that they should.

The economic aspects of the practices were not directly addressed in this study but the influence of total list size may suggest that practice finances do play a role in development. Practices with more patients will have a greater disposable income and be more able to invest in the development of new services or equipment. The failure of number of patients per partner or the number of partners to provide additional explanations of the level of development suggests that total practice income rather than income per partner is the important influence. The finding that the mean age of the partnership does influence the level of development agrees with the results of other studies.⁶ As partnerships age they become less likely to introduce new developments.

While the location of the practice in an inner city, urban or rural environment was not found to be an explanation for variations in practice development, the characteristics of the locality containing the practice address as described by the underprivileged area score were found to be important. Even in this relatively advantaged part of the UK patients in underprivileged areas were found to be served by less developed practices. The role of the family health services authority in explaining practice development is curious. It may be that this variable reflects environmental factors that are not detected by the underprivileged area score. It is possible that local vocational training schemes or the attitudes of resident general practitioners influence local recruitment and reactions to innovation. It is also possible that the management of a particular family health services authority could influence the process of development, even under the terms of the contract in force up to April 1990.

These findings, when considered together, indicate that in this area of England the level of development of a practice is influenc-

ed by the partners themselves, practice management, the social environment of the practice, and the increasing resources that are made available as the list size of the practice increases. However, these variables were able to explain only 42% of the variation in standards. There must be additional explanatory variables that have not been included in this study. Details of practice income were not requested, but this might exert some additional influence over the ability to innovate. The effects of undergraduate, postgraduate and continuing education have also not been explored but might have some influence as might the attitudes of doctors to change. Resources are necessary for the development of practices, but so too are practitioners with the time, ingenuity and energy to use them. Further study of the process of innovation and change in general practice is required in order to clarify what facilitates general practitioners to innovate.

The new contract and the fundholding scheme are intended to raise the standards of all practices to those of the best, and this study shows that the most developed practices are training practices. There is a risk that the fundholding scheme will increase rather than reduce the gap in standards, as the most developed practices will be better able to embark on fundholding, and will be assisted by additional resources and improved management. Further studies are essential to discover if the recent changes to general practice succeed in closing the gap in standards or whether two classes of practice emerge.

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Acknowledgements

I would like to thank Christine Slade for organizing the data collection, all the doctors who completed the questionnaires, Michael Whitfield and Anthony Hughes and the anonymous reviewer of the paper. The study was funded by a grant from the South Western Regional Health Authority Regional Research Committee. Dr Baker was funded by Ciba-Geigy Pharmaceuticals.

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