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Family medicine attributes related to satisfaction, health and costs

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Objective. To identify, from a systematic review of the literature, the attributes of Family Medicine (FM) that influence the primary health care outcome as measured by users' satisfaction, improvement in patient health and in costs.

Data Sources. Literature search of Medline and the Cochrane library using MeSH terms 'Primary Health' or 'Family Practice' or 'Family Physicians' and 'Outcome Assessment' or 'Process Assessment'. Papers were excluded if they lacked a based on primary data, if no single component of FM was assessed; if indicators of evaluation were not related to health, satisfaction or costs.

Results. A total of 356 articles were initially identified and 19 finally met the inclusion criteria. Study methods were a systematic review of randomized control trials, a double-blind randomized trial, 4 systematic reviews of observational studies, 2 cohort studies and 12 descriptive cross-sectional studies.

Conclusions. There was evidence of relationships between the attributes of FM and the service outcomes measured by indicators of satisfaction, health and cost. User satisfaction was associated with accessibility, continuity of care, consultation time and the doctor–patient relationship. Improvement in patient's health was related to continuity, consultation time, doctor–patient relationship and the implementation of preventive activities. Coordination of care showed mixed results with health outcomes. Continuity, consultation time, doctor–patient communication and prevention were cost-effective in the primary care setting.

Keywords. Family medicine, outcomes, health satisfaction, costs.

Introduction

In 2002, WONCA Europe issued a new definition of GP/Family Medicine[1] (FM) which encompasses the ideal content of the speciality, the core content as well as the function of this clinical discipline.[2] It offers a new and universal approach while continuing to be based on the traditional attributes of FM.

As with every public service, FM should be accountable to society. Currently, there is a great variety of health care evaluation indicators. This complicates comparison between different organizations and with other types of services. Policy makers and managers often measure only partial aspects of the service.[3] In many cases, we do not know if these performance indicators inform on the final health care outcome, or merely offer a description of how the health care process had been conducted.

Evaluation of the final outcome of the health care process can be considered in three dimensions: (1) impact on health dimension, as evaluated by mortality and morbidity rates or by subjective health questionnaires; (2) the satisfaction dimension, defined as the level at which the user's expectations of the service are met and (3) the economic dimension, which is the cost of the services provided.

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In this article we review available evidences in international literature on relationships between the attributes of FM and the final outcomes of health care provision in terms of health, user satisfaction and cost. Despite considerable evidence indicating that better results are obtained when health systems are orientated towards primary care and FM,[4] we sought to identify the specific attributes of FM that could be responsible for these positive outcomes.

The objective of the present study was to identify, via a literature search, the attributes of FM that are related to the outcomes with respect to dimensions of satisfaction, health and costs. The identification of these attributes can be of considerable use in defining a group of indicators that more effectively describe the benefits that this type of health care provides for the population.

Method

We performed a literature search of the Medline database and of the Cochrane Library (The Cochrane Controlled Trial Register). Key word descriptors or MeSH Thesaurus terms were 'Primary Health' or 'Family practice' or 'Family physician') and 'outcome assessment' or 'process assessment'. Publication type limitations excluded 'letter', 'editorial' or 'practice guideline'. No language limits were used.

The search included all studies up to June 2005 that evaluated the attributes of FM using qualitative or quantitative methodology (observational and experimental, systematic reviews and meta-analyses).

Articles were excluded because of the following criteria: (1) papers without analyses based on primary data; (2) papers not assessing at least an attribute of FM; (3) studies where the indicators of evaluation were not related to health, user satisfaction or costs.

The selection of the studies and extraction of the data were performed by three investigators (MSC, EPR and JGB). All disagreements were solved by dialogue and final consensus among all six coauthors.

From each of the identified studies, the following variables were collected: identification of the study, numbers and types of participants, methodology (study design, setting of the study, participants, indicators of service evaluation and sources of the information) and the most relevant results/outcomes.

Results

The literature search identified 356 articles. On applying the different selection criteria, 20 articles were finally selected. The de-selected papers were rejected because they lacked a research based on primary data (n = 16); they did not assess at least one component of FM (n = 296) and their evaluation indicators were not related to health, user satisfaction or costs (n = 24). The selection procedure is depicted in Figure 1. The methodologies of the selected papers are summarized in Table 1.

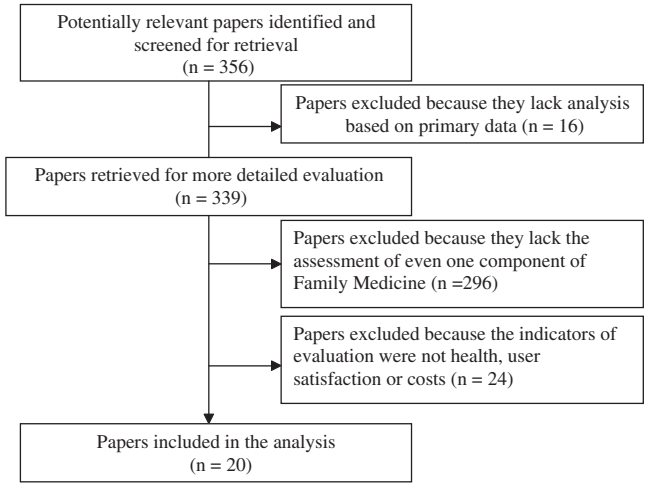

FIGURE 1 *Progress through the stages of article selection in the literature search*

Table 2 summarizes the studies that had found associations between attributes of FM and patient satisfaction outcome as the health care indicator.

The accessibility indicators associated with greater satisfaction were obtaining an outpatient appointment with the family doctor for the same, or following, day[5] and spending a short time (6–10 minutes) in the consultation waiting room.[5]

The continuity indicator that was associated with satisfaction was having the same family doctor over an extended period.[5–10]

The length-of-consultation indicators (or the patient's perception of the duration) showed a direct association with increased satisfaction i.e. the longer the clinical visit the greater the patient satisfaction.[11–13] Short consultations classified by the author as 'with high technical medical efficiency' seemed to be related to poor communication and patient dissatisfaction.[14]

Citizens are more satisfied with the doctor who appears warm, friendly and with a reassuring manner,[15] who is confident[16,17] and provides patient-centred care,[18,19] who shows an interest in the patient's concerns and expectations,[19] who discusses the health problem, who provides a clear explanation of the diagnosis and prognosis and who shares the treatment decision with the patient.[19] Greater satisfaction occurs when the patient has the perception of being listened to, of being treated with respect, humanely and as fairly as others.[19] An overall personal patient–doctor relationship increased the odds of the patient being satisfied with the consultation.[7] There was no support for the hypothesis that GPs' task-relevant patient-centred behaviour would predict patient enablement as well as satisfaction.[12] Physicians who held patient-centred

TABLE 1 *Methodology (study types) and results of the selected articles*

First author	Study design	Participants	Country	Main results
Wasson[6](84)	Double-blind randomized trial	17 medical staff and 776 patients	USA	The continuity of outpatient care provider results in more patient satisfaction, shorter hospitalizations and fewer emergency hospital admissions
Hjortdah[7](92)	Cross-sectional observational study	133 GPs and 3918 patients	Norway	An overall personal patient–doctor relationship increased the odds of the patient being satisfied with the consultation. The duration of the patient–doctor relationship in itself showed a weak but significant association with patient satisfaction
McColl[23](98)	Systematic reviews	Primary care documents	UK	The use of evidence-based indicators linked to interventions that improve health outcomes such as those suggested in this study could be an important adjunct if used in interactive practice or primary care group educational meetings
Safran[13](98)	Cross-sectional observational study	6094 patients	USA	Physicians' comprehensive knowledge of patients and patients' trust in their physician were the variables most strongly associated with compliance. Trust was the variable most strongly associated with patients' satisfaction with their physician. The leading correlates of self-reported health improvements were integration of care, thoroughness of physical examinations, communication, comprehensive knowledge of patients and trust
Radish[24](99)	Cohort study	12.997 patients	USA	Continuity of care was associated with reduction in resource utilization and of costs
Stewart[18](00)	Observational cohort study	39 family physicians and 315 patients	Canada	Patient-centred communication was correlated with the patients' perceptions of finding common ground. In addition, positive perception was associated with better recovery from discomfort and concern, better emotional health two months later, fewer diagnostics tests and referrals
Campbell[8](01)	Cross-sectional observational study	60 general practice	UK	Asthma, diabetes and angina quality of care were higher in practices with 10 minute booking intervals. Diabetes care was better in larger practices and in practices with better team climate. Access was better in small practices. Preventive care was worse in practices located in socioeconomically deprived areas. Satisfaction, continuity of care and access to care were higher in practices where staff reported better team climate
Di Blasi[15](01)	Systematic review. Randomized controlled trials	25 randomized controlled trials.	USA and Canada	Three of these studies showed that enhancing patients' expectations through positive information regarding the treatment or illness, while providing support or reassurance, significantly influenced health outcomes
Goedhuys[14](01)	Cross-sectional observational study	34 general practice	Belgium	There was a negative correlation between the "efficiency-per-time score" of the GP-trainees and the satisfaction of the standardized patients and between the "efficiency-per-time score" and the quality of the communication
Krupat[20](01)	Cross-sectional observational study	45 doctors and 909 patients	USA	The patients of patient-centred physician were no more trusting or endorsing of their physicians, and they were not more satisfied with the target visit. However, patients whose belief were congruent with their physicians' beliefs were more likely to trust and endorse them, even though they were not more satisfied with the target visit

TABLE 1 *Continued*

First author	Study design	Participants	Country	Main results
Little[19](01)	Cross-sectional observational study	661 patients	UK	If doctors don't provide a positive, patient-centred approach patients will be less satisfied, less enabled and many have greater symptom burden and higher rates of referral
Sturmberg[9](01)	Cross-sectional observational study	254 patients	USA and Canada	Comprehensiveness is explained by modified continuity index and age. Non-related independent variables are gender, number of visits and number of years attending the practice
Cape[11](02)	Cross-sectional observational study	160 patients	UK	Consultations where patients were more satisfied appeared to patients to have lasted longer, but were not actually longer. Patient concerns about time may be as much about quality time as about actual time
Hartle[21](02)	Cross-sectional observational study	224 participants	USA	Primary care providers' interpersonal treatment and longitudinal continuity were predictors of comprehensive knowledge of the patient
Mead[12](02)	Cross-sectional observational study	173 videotaped consultations	UK	GP's patient-centred behaviour did not predict patient satisfaction or enablement
Wilson[13](02)	Systematic review	30 papers	USA, UK, Sweden, The Netherlands	Patients seeking help from a doctor who spends more time with them are more likely to have a consultation that includes important elements of care
Bower[5] (03)	Cross-sectional observational study	14291 patients	UK	Satisfactory standards of access were next day appointments and a 6–10 minute wait for consultations. A satisfactory level of continuity was seeing the same GP "a lot of time"
Tarrant[17](03)	Cross-sectional observational study	1078 patients	UK	Measures of the quality of the GP–patient relationship were strongly associated with trust in a patient's usual GP, whereas patients' reports of duration of registration with the practice, and proportion of visits to the usual GP were not
Cabana[10](04)	Systematic review	18 papers	USA	No studies documented negative effects of increased continuity of care on quality of care. Continuity of care is associated with patient satisfaction, decreased hospitalizations and emergency department visits and improved receipt of preventive services
Stille[29] (05)	Review and experts advice	81 papers	USA	Although clinical scenarios demonstrate the importance of good coordination of care as an essential part of primary care, objective evidence showing its benefit is limited

TABLE 2 *Relationship between attributes of FM and satisfaction of the citizen*

Attributes	References	Indicators
Accessibility	Bower[5]	GPAS questionnaire* (indicators of accessibility: waiting-list time for an appointment with a specific doctor, or any doctor; waiting time spent in the consulting room[5]
Continuity	Bower[5]	GPAS questionnaire (indicator of continuity; to be cared-for by the same doctor over an extended period of time)[5]
	Sturmberg[9]	Indicators of continuity in the process (index of modified continuity) and of continuity in the outcomes (acute problems, chronic, prevention and psychosocial[9]
	Campbell[8]	Questionnaire on accessibility, continuity, interpersonal relationship and care[8]
	Hjortdahl[7]	Questionnaire to evaluate the influence of continuity of care on patient satisfaction[7]
	Cabana[10]	Systematic review, indicators to determine the effect of continuity of care on the quality of patient care[10]
	Wasson[6]	Indicators of continuity on the process and outcomes of the medical care[6]
Consultation time	Campbell[8]	Questionnaire on accessibility, continuity, quality of care to chronic pathologies and application of preventive activities[8]
	Wilson[13]	Indicators of capacity for resolution, effectiveness, efficiency, accessibility, patient care and health[13]
	Cape[11]	Questionnaire on health status (General Health Questionnaire), satisfaction and estimation of the consultation lenght[11]
	Goedhuys[14]	Quality of communication (MAAS-global Questionnaire), satisfaction (EVA-PAT Questionnaire) and consultation time[14]
	Mead[12]	Videotaped, questionnaire on satisfaction (CSQ), questionnaire on enablement (PEI)[12]
Doctor–patient relationship	Goedhuys[14]	Recording of the visit, quality of communication (MAAS-global Questionnaire), QVRS, SF-36 and indicators of resolution capacity[14]
	Di Blasi[15]	Indicators on cognitive aspects of the consultation, emotional aspects of care, health status, use of health services, satisfaction, treatment expectations, treatment compliance and doctor–patient relationship[15]
	Tarrant[17]	Confidence, communication, interpersonal relationship, knowledge and GPAS* questionnaire[17]
	Safran[13]	PCAS Questionnaire (including structural and organizational factors and quality of doctor–patient interaction)[13]
	Krupat[20]	PPOS questionnaire including: confidence in the doctor, satisfaction with the clinical care, and evaluation of the doctor, post-visit[20]
	Stewart[18]	Patient-centred communication (recorded interview and perception of the patient) quality of life (CVRS and SF-36) and resolution capacity[18]
	Little[19]	Questions on satisfaction, communication, personal relationship, awareness of the problem and interest in the effect of the problem on personal and family quality of life[19]
	Hjortdahl[7]	Questionnaire to evaluate the influence of continuity of care on patient satisfaction[7]
	Mead[12]	Videotaped, questionnaire on satisfaction (CSQ), questionnaire on enablement (PEI)[12]

beliefs regarding power and information-sharing were rated no more positively on measures of satistaction.[20]

Table 3 summarizes the studies identified that had shown an association between FM attributes and health-outcome indicators.

An association was observed between the continuity of care, such as having the same family doctor over a protracted period of time,[5,6,8,10] and better health indicators. The patients attended to by the same doctor presented with less back pain, less infarcts, less liver pathologies and less stomach ulcers.[21] Similarly, the doctors with longer continuity are better able to manage acute and chronic problems such as psychosocial problems, to pay more attention to diet and weight fluctuations, to smoking cessation, to vaccination, lipid profiles, blood pressure and alcohol consumption.[9] Having the same health care provider was related, as well, to more effective implementation of appropriate preventative activities resulting in a reduction in morbidity and mortality.[21] Patients with longer continuity had fewer hospitalizations, fewer days in intensive care, shorter hospital stays and lower percentage of emergency hospitalizations.[6,10]

Associations were found between the length of consultation appointment and the health dimension. When the period of consultation time was $\geqslant$10 minutes, those patients with diabetes, asthma and cardiovascular disease achieved better control.[8] The doctors who provided longer consultation time identified and treated more chronic problems and psychosocial disorders. They achieved greater patient compliance with treatment recommendations for specific disorders (blood pressure and dysuria), they provided more active and passive advice, implemented more preventive measures to promote better health, prescribed less drugs and provided better evidenced-based quality of treatment.[13]

Perceived health improvement was based on confidence in the doctor,[17] integrated care, detailed physical examination, good communication and knowledge of the patient.[13] Patient adherence to treatment was related to greater empathy with the doctor who had a more detailed knowledge of the patient and to those patients who evidenced a greater reliance on their doctor.[13] The health status of the patient improved when the doctor provided a clear diagnosis, positively transmitted the prognosis and treatment, and paid

TABLE 3 *Relationship of attributes of FM and health outcomes*

Attributes	References	Indicators
Continuity	Sturmberg[24]	Indicators of continuity of the process (index of modified continuity) and of continuity in the outcomes (acute problems, chronic, prevention and psychosocial problems[24]
	Hartley[21]	PCAS Questionnaire (including factors of structure, organization and quality of doctor–patients interaction), preventive advice and detection of health problems[21]
	Cabana[10]	Systematic review, indicators to determine the effect of continuity of care on the quality of patient care[10]
	Wasson[6]	Indicators of continuity on the process and outcomes of the medical care[6]
Coordinated Care	Stille[29]	Review, indicators to determine the effect of coordinated care on the quality of patient care and health outcomes[29]
Consultation time	Campbell[8]	Questionnaire on accessibility, continuity, interpersonal attention[8]
	Wilson[13]	Indicators of resolution capacity, effectiveness, efficiency, accessibility, attention to client and to health[13]
	Cape[11]	Questionnaire on health status, satisfaction and estimation of consultation time[11]
	Goedhuys[14]	Quality of communication (MAAS-global Questionnaire), satisfaction (EVA-PAT Questionnaire) and consultation time[14]
Doctor–patient relationship	Di Blasi[15]	Indicators on cognitive aspects of the consultation, emotional aspects of the care, health status, use of health care services, satisfaction, treatment expectation, treatment compliance and doctor–patient relationship[15]
	Tarrant[17]	Confidence, communication, interpersonal relationship, knowledge and GPAS questionnaire[17]
	Safran[13]	PCAS questionnaire and questions on adherence, satisfaction and health status[13]
	Krupat[20]	PPOS questionnaire that includes: confidence in the doctor, satisfaction with the consultation and evaluation of the doctor post-visit[20]
	Stewart[18]	Communication centred on the patient (recorded interview and perception of the patient), quality of life (CVRS and SF-36) and resolution capacity[18]
	Little[19]	Questions on satisfaction, communication, personal relationship, awareness of the problem and interest in the effect of the problem of personal and family quality of life[19]
Preventive activities	McColl[23]	Mortality theoretically avoided, mortality avoided, additional mortality avoided, reduction in relative risk, reduction in absolute risk, NNT, number and proportion of persons eligible for each intervention among 100 000 citizens, number of deaths prevented if 100% of the population received the intervention[23]

attention to the cognitive and emotional aspects of the patient.[15] When the patient and doctor had shared beliefs, there was an increase in the patient's confidence in the professional health care provider, the patient was more likely to recommend the service to other potential patients, and the doctor's advice was more likely to be adhered to.[20] When the consultation was patient centred, there was a quicker recovery from the disease and a greater health-status improvement.[18,19]

A recent review reported positive results on the effect of care coordination on health care outcomes such as appropriate use of health services. In contrast, studies that examined health outcomes alone tended to report mixed results.[22]

Implementation of preventive measures was directly related to health. Mortality and morbidity rates were reduced with the following intervention measures: prescribing aspirin to persons with high cardiovascular risk; controlling blood pressure; providing anti-smoking advice; treating cardiac insufficiency with angiotensin converting enzyme (ACE) inhibitors; prescribing statins for primary and secondary hyperlipidaemias; prescribing oral anti-coagulants for atrial fibrillation and immunizing against influenza, pneumonia and tetanus.[23] Table 4 summarizes the relationships between the attributes of primary care and the costs. Having the same family doctor over a long period of time was associated with lower costs.[10,21] Continuity was associated with decreased total annual health care expenditure.[10] Continuity of care was related to indirect indicators of efficiency such as fewer hospital days, fewer intensive care days, shorter hospital stays and lower percentages of emergency hospitalizations.[6,10] Continuity of care was associated with reduction in resource utilization and of costs.[24]

Longer consultation time was associated with indirect indicators of efficiency. Doctors who spend more time in the consultation process appear to prescribe less and with more evidence-based treatment.[13] A short consultation, with a high level of technical efficiency, can be very productive but with poor patient satisfaction.[14]

The review by McColl *et al.*[23] analysed the cost-effectiveness of different preventative measures and concluded that the most cost-effective treatments were in the control of hypertension, in the use of statins for patients with high cardiovascular disease risk, and in the use of oral anti-coagulants for patients with atrial fibrillation and those having stroke risk-factors. Other strategies were, possibly, cost-effective as well. These included aspirin for patients with high risk of coronary artery or cerebro-vascular events, anti-tobacco advice for smokers, statins in patients with low risk of coronary

TABLE 4 *Relationship of attributes of FM and of costs*

Attributes	References	Indicators
Continuity	Hartley[21]	PCAS Questionnaire (including factors of structure, organization and quality of doctor–patient interaction), advice on prevention and detection of health problems[21]
	Cabana [10]	Systematic review, indicators to determine the effect of continuity of care on the quality of patient care[10]
	Wasson[6]	Indicators of continuity on the process and outcomes of the medical care[6]
	Raddish[24]	Indicators of health care utilization and costs (number of prescriptions, number of hospital admissions, the number of outpatient visits)[24]
Consultation time	Wilson[13]	Indicators of resolution capacity, effectiveness, efficiency, accessibility, attention to client, and of health[13]
	Goedhuys[14]	Quality of communication (MAAS-global Questionnaire), satisfaction (EVA-PAT Questionnaire) and consultation time[14]
Doctor–patient relationship	Goedhuys[14]	Quality of communication (MAAS-global Questionnaire), satisfaction (EVA-PAT Questionnaire) and consultation time[14]
	Stewart[18]	Communication centred on the patient(recorded interview and perception of the patient), quality of life (CVRS and SF-36) and resolution capacity[18]
	Little[19]	Questions on satisfaction, communication, personal relationship, awareness of problems and interest in the effects of the problem on personal and family quality of life[19]
Preventive activities	McColl[23]	Mortality theoretically avoidable, mortality avoided, additional mortality avoidable, relative reduction of risk, absolute reduction of risk, NNT, number and proportion of eligible persons for each intervention among 100 000 citizens, number of preventable deaths if 100% of the population received the intervention[23]

artery disease and vaccination against the influenza virus in those >65 years of age.[23] Indirectly, patient-centred consultation appeared to be efficient because it decreased the number of referrals and diagnostic tests.[18,19] A good interpersonal relationship between doctors and patients was associated with less referrals to the specialist.[19] Short consultations appeared to be more productive, although there appeared to be an inverse correlation between the consultation time and the level of patient–doctor communication.[14]

Discussion

This review obtained evidence of associations between FM attributes and the outcomes of health care as measured by patient satisfaction, improvements in health and of costs. User satisfaction was related to continuity of care, consultation time and doctor–patient relationship. Accessibility, continuity of care, consultation time, patient–doctor relationship and the preventive health care activities were associated with improvements in the level of population health. The coordination of care has mixed results with respect to health outcomes. Continuity, consultation time, doctor–patient communication and preventive health care activities were cost-effective in the primary care setting.

These results highlight that the core values of FM stated in the new definition of WONCA relied on an empirical ratification. An effective family doctor is one who follows up the patient over the greater part of his life and who is accessible in the initial phase of his patient's every new health problem. This leads to a relationship of understanding and confidence that encourages the patient to adopt an active and responsible attitude towards his own health. The family doctor takes the time to listen and understand the patient, to apply scientific medicine, to anticipate the pathology and to maximize the benefit of this close relationship with the patient in providing preventive measures appropriate for patient's specific needs.

It is important to highlight that this classical figure of the family practitioner not only satisfies the patient but has positive effects on health, as well. A group of experts gathered under the auspices of the Robert Wood Johnson Foundation[25] observed that despite people expressing a preference for a personal family physician (who is aware of the individual's clinical history and who appreciates the patient as a person) the family doctors in the United States are, currently, not fulfilling this commitment to the patient. The expert panel stated that this was the central point of the crisis in FM in some countries, particularly the USA. The profession is a caring one, and one which has tremendous difficulties in fulfilling the natural hopes and aspirations of the patients but which should, indeed, define the profession.[26]

It seems surprising that only a limited number of papers dealt with evaluating the core attributes of FM. It was not our aim to review the whole literature on FM attributes. We restricted the selection criteria in order to fulfil our specific research objective. We rejected papers presenting comparisons of the care provided by FM doctors to patient groups compared with other specialists if, in the article, it was not possible to identify which attribute FM was being evaluated. Other papers assessing key aspects of primary care nursing or other health care professionals were also rejected even if they were evaluating attributes that were similar to those of FM.

A possible limitation of the present study could be that not all the relevant papers on the topic had been identified. As stated in the Methods section, the literature search was performed on the main electronic databases. However, it is possible that there have been some relevant studies containing additional information but published in non-indexed journals.

Table 1 shows that there is an evident publication bias in favour of English-speaking countries. This limits the acquisition of evidence and jeopardizes the external validity of the results of this literature review. Also, the observed associations may not exist in other cultural environments, or in health service organizations with health-provision structures that are different from the National Health Systems of most Western developed countries.

We included every study identified in the literature search irrespective if they had been included in one of the four systematic reviews included in the present study i.e. the purpose of our study was not to pool patients from different studies but to conduct a literature review aimed at presenting all the published information currently available on the theme of FM attributes and patient outcomes.

Clinical trials and cohort studies offer good evidence on the causal relationship between continuity of care and health improvement, satisfaction and costs. Our systematic review of randomized controlled trials and of a cohort study offers good evidence that patient-centred care improves health outcomes and efficiency. The majority of studies included in the present analysis only evaluated associations between variables; because most were observational cross-sectional studies they were not able to propose causal relationships. We observed, for example, that doctors who provided longer consultations and better continuity of care achieved higher user satisfaction and more improvements in patient health. However, the design of these studies does not allow us to assume that by merely increasing the time per consultation and the continuity of care provided by the family physician we would automatically result in improvement in the patient's satisfaction or in the patient health status.

Physician performance is being profiled increasingly in the United States in order to provide performance data to the public and to make routinely collected data available to health care purchasers and regulators.[3] Spain[22,27] and many other countries are likely to follow suit. The six essential attributes of the PHC that are related to outcomes must drive the way we evaluate and organize our services and pay the salaries of the professional health care providers if we wish to maximize the impact of the clinical care provided in primary care settings. Management policies that used only FM services for cost-containment purposes have not only damaged the image of the family doctor but have underused a powerful professional who could contribute to improving user satisfaction as well as the overall health of the citizen. Conversely, applying organizational models that strengthen the attributes we have identified would induce progressive improvements in health care outcomes.

A recent sceptical editorial pointed out that ''if primary care has anything at all to do with improving a person's health, then its contribution to that end will be measurable''[28]. The present study shows that this relevant field of research already exists with respect to FM but, given the available evidence is limited, more research is warranted. Attributes are core values of FM, but more evidence linking the intuitively valuable results to improvements in health care outcomes is needed so as to demonstrate its value to policymakers and to the paymasters who are a central part of a rational health care system.

More prospective analytical studies whose design would help to overcome the mere associations of variables are needed if we are to establish a causality of relationship between FM attributes and outcomes. It is necessary as well to unify the definitions of FM attributes since variations in the concepts of the attributes as well as in the evaluation of indicators make it difficult to make international comparisons and also impedes meta-analyses. Definitions of FM attributes need to be better defined for future studies.

Policy makers and health care managers need to conduct evidenced-based evaluations of primary care services and to make the findings known to the public as well as to the other health care professionals. Performance indicators of family practitioners need to be based on the attributes that have been identified as having an association with health outcomes, user satisfaction and costs; especially those that have an impact on the patient's health. To facilitate its implementation, cost-effective evaluation systems need to be developed to assess these dimensions efficiently and which can then be applied in monitoring primary care services. Aspects such as the doctor–patient relationship, consultation time and clinical-care continuity merit special attention.

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