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Use of the EFQM excellence model to improve hospital pharmacy performance

Carmen Guadalupe Rodríguez-González^{a,*}, Camino Sarobe-González^a,
 María Esther Durán-García^a, Ana Mur-Mur^a, María Norberta Sánchez-Fresneda^a,
 María de las Mercedes Pañero-Taberna^a, Rosa Pla-Mestre^b, Ana Herranz-Alonso^a,
 María Sanjurjo-Sáez^a

^a Pharmacy Department, Hospital General Universitario Gregorio Marañón, Instituto de Investigación Sanitaria del Hospital Gregorio Marañón. c/ Doctor Esquerdo, 46, 28007, Madrid, Spain

^b Quality Improvement Department, Hospital General Universitario Gregorio Marañón, Instituto de Investigación Sanitaria del Hospital Gregorio Marañón. c/ Doctor Esquerdo, 46, 28007, Madrid, Spain

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ABSTRACT

Background: Quality management systems are widely used to improve the quality and efficiency of healthcare services. However, evidence regarding the value of the European Foundation for Quality Management (EFQM) model in improving the performance of hospital departments is lacking.

Objective: To describe the value of the EFQM model as a quality framework for improving the performance of a hospital pharmacy department (PD).

Methods.

Design: A case study describing the development of the Enablers' criteria of the model and the results achieved.

Setting: PD in a tertiary-care teaching hospital of the Madrid Public Health Service (Spain).

Interventions: Four self-assessments were conducted using the questionnaire "Perfil" during the period 2008–2017. A quality improvement plan was developed on the basis of the results of each self-assessment. A balanced scorecard was used to track progress. Improvement in quality management was externally evaluated by the Spanish Management Excellence Club in 2010, 2013, and 2017.

Main outcome measures: Change in the scores obtained in the external assessments, the quality improvement initiatives implemented for each Enabler's criteria, and the results of key performance indicators.

Results: The EFQM was a useful framework for self-assessment and a good system for identifying improvement initiatives. The model progressively improved the services provided for patients, the safety and efficiency of pharmacotherapy, productivity of the PD, and customer and staff satisfaction. The external assessment scores exceeded 300 points in 2010, 400 points in 2013, and 500 points in 2017. Scores for all of the criteria progressively improved, particularly in 'people'.

Conclusions: The EFQM was a practical tool for improvement of PD performance, especially in areas such as strategic planning, people management, and innovation. The main difficulties were the lack of decision-making capacity in relevant areas and benchmarking with other PDs.

Introduction

Quality management systems are widely used to improve the quality and efficiency of healthcare services. After the International Organization for Standardization (ISO) 9001, the European Foundation for Quality Management (EFQM) model is the most widespread approach in Europe.^{1,2}

The EFQM model is a non-prescriptive framework based on nine criteria that assess the progress made by organizations on their path to excellence. It emphasizes self-assessment and the detection of strengths and weaknesses using the guiding principles of the criteria. This model is a valuable tool that can help organizations to recognize gaps in quality management and monitor their improvement.³

However, high-quality evidence regarding the effect of the EFQM

* Corresponding author. Pharmacy Department, Hospital General Universitario Gregorio Marañón. c/ Doctor Esquerdo, 46, 28007, Madrid, Spain.
 E-mail address: criguez@salud.madrid.org (C.G. Rodríguez-González).

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model on the quality and performance of hospitals is lacking. Of the few experiences reported, most are based on descriptive or survey studies instead of experimental studies to test effectiveness.^{1,4–7} Furthermore, although the EFQM model could be applied at both organizational level and departmental level, most experience is limited to application to healthcare organizations as a whole. Only Vallejo et al.⁸ reported the value of the EFQM model for self-assessment in a hospital ward, in this case Psychiatry, achieving 311 points (49% increase) 2 years after implementation. More relevant data are needed, especially in other, more experienced hospital departments.

This article describes the value of the EFQM model as a quality framework for improving the performance of a central hospital service, namely, a pharmacy department (PD) in a public hospital that achieved the gold Q award (≥ 500 points) after 10 years of continuous improvements. The fact that this project was carried out in a relatively large department that works in close association with the governing bodies of the hospital, as well as with the medical staff, nursing staff, and patients, influenced both the methodology and the results.

The aim of the present article, therefore, is to describe the long-term value of implementation of the EFQM Excellence model in a hospital pharmacy, so this experience can serve as a basis for other departments that might wish to take a similar approach.

Methods

Setting

This study was conducted at a PD in a tertiary-care teaching hospital of the Madrid Public Health Service (Spain). This hospital has 1225 beds and serves a population of 350,000 inhabitants (700,000 for specific services), with approximately 50,000 admissions per year.

The ultimate goal of the PD is to improve the safety and efficiency of pharmacotherapy in order to achieve optimal patient health outcomes. Specifically, the PD supports the hospital drug and therapeutics committee in drug selection and formulary management, assists physicians in prescribing, compounds and dispenses all medications to hospital wards and outpatients, and provides pharmaceutical care programs, including pharmacogenetic studies and pharmacokinetic monitoring. On average, the PD manages an annual drug expenditure of €80 million, compounds more than 100,000 sterile intravenous admixtures and chemotherapies per year, dispenses medications to 10,000 outpatients, and supports the management of 450 clinical trials.

The PD is staffed by a multidisciplinary team of 98 professionals,

including 26 pharmacists, 8 pharmacy resident interns, 12 nurses, and 35 technicians. Every year, it is host to more than 20 residents from other hospitals and 40 pharmacy students in training.

Implementation of the EFQM within the PD

Total quality has been a key objective in the strategic plan of the PD since 2004. The PD achieved its first ISO 9001 certification in 2005 and the ISO 14001 certification in 2008. However, in 2007, in order to progress from process-based management to more results-oriented management, the PD started to use the EFQM model as additional support for decision making. The implementation of this model was considered an opportunity to recognize gaps in quality management, prioritize strategic goals, strengthen specific areas (partnerships, creativity, and innovation), and provide an external, objective perspective for future change.

The launch of the project involved a self-assessment of the PD to identify areas for improvement in 2008. This self-assessment was the first step of an in-depth quality improvement plan involving strategic planning and the development of new tools to improve process management. In 2010, the PD conducted a second self-assessment, which was externally audited and awarded the EFQM 300 + European Seal of Excellence. Since then, the PD has developed numerous improvement plans and has undergone 2 additional self-assessments, both validated with the 400+ (year 2013) and 500 + European Seal of Excellence (year 2017).

A multidisciplinary assessment team was set up to identify and coordinate the main self-assessment tasks. This team, whose members remained unchanged throughout the study period, comprised 7 pharmacists and the Director of Nursing of the PD. The pharmacists involved were the Director of the PD, the Assistant Director, the pharmacist responsible for quality management in the PD, and 4 pharmacists responsible for the following key processes: “Drug Compounding”, “Pharmaceutical Care”, “Research and Clinical Trials Management” and “Communication and Image Management”.

Monthly meetings were held to coordinate and follow up quality improvement initiatives. Although an external consultant and the hospital's Quality Improvement Department provided technical support to the team, the work was designed and carried out by professionals from the PD, with no extra financial or human resources. Since members of the PD lacked knowledge of the EFQM, the assessment team members were trained in quality improvement and EFQM.

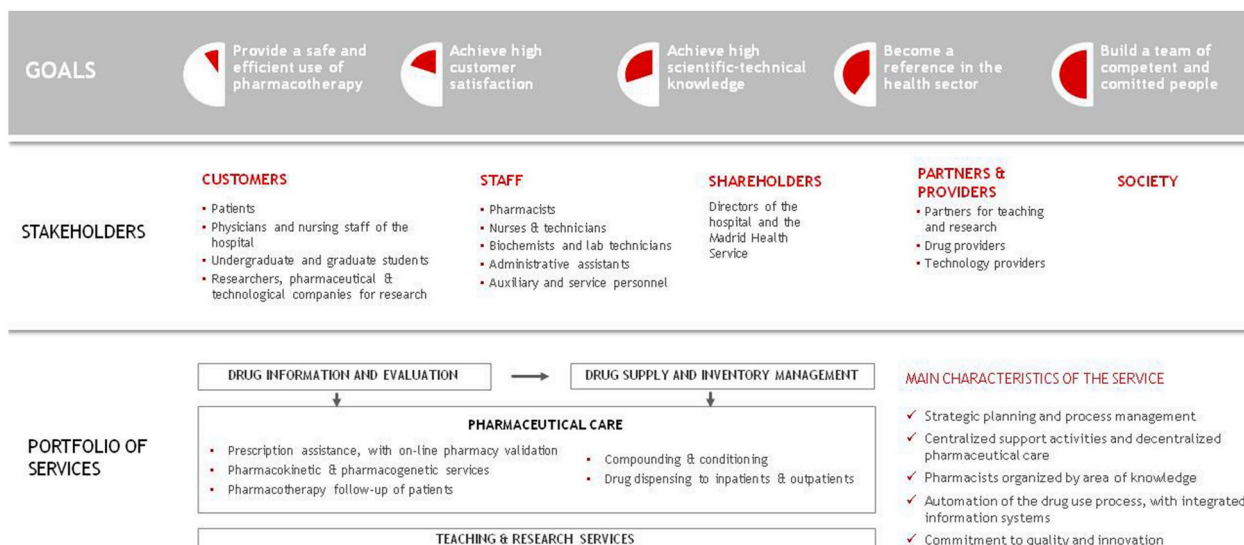


Fig. 1. Goals, stakeholders, and portfolio of services of the Pharmacy Department.

Quality management and supportive tools

The PD defined its major objectives, its stakeholders, and portfolio of services (Fig. 1), and different tools were developed, among which are:

1. Template for the systematic and structured identification of stakeholders' needs
2. Medium-term strategic plan, which is reviewed and deployed annually, and a template for the *Strengths, Weaknesses, Opportunities, and Threats* (SWOT) analysis, according to stakeholders' needs and the performance of the PD. This analysis facilitates long-term policy, planning, and priority setting through annual operating plans, thus accomplishing the requirements of criterion 2.
3. Creation of a Pharmacy Innovation Center within the PD to promote innovation in pharmacotherapy, technology and services (criterion 2 and 4).
4. Development of a balanced scorecard with Key Performance Indicators and use of internal information systems for the follow-up of indicators and benchmarking (criterion 5 and 9).
5. Design, use, and analysis of surveys for outpatients, physicians, nursing staff, universities, pharmacy resident interns, clinical trial investigators and sponsors, key partners, and drug suppliers. These surveys were necessary to evaluate customer satisfaction regularly and to compare data with those of other hospitals (criterion 4, 5, 6, and 8).
6. Design, use, and analysis of a work climate survey to measure motivation and people satisfaction in the PD. This initiative makes it possible to compare data on satisfaction between organizations, thus fulfilling the requirements of criterion 1, 3 and 7.

Self-assessment and certification methods

The method used to evaluate the performance of the PD was the RADAR (Results, Approaches, Deploy and Assess and Refine) logic.⁹ This dynamic assessment framework provides a structured approach to questioning the performance of an organization and is used for any organization applying for the EFQM Excellence Award and most national excellence awards in Europe (Appendix 1). The 2 applications used were the “Perfil” questionnaire,¹⁰ which is provided by the EFQM representative in Spain (and the version used by organizations for self-assessment) and the *RADAR Matrix*⁹ (Appendix 2), which is the version used by external evaluators during the certification process.

Self-assessment

All self-assessments were made using the “Perfil” questionnaire. Perfil is an electronic questionnaire which consists of 120 questions grouped under EFQM sub-criteria, with a rating scale of 1–100. Each of the 8 members of the assessment team individually conducted an evidence-based assessment process, in which the PD was rated based on the 120 questions. The final score for each question of the self-assessment was the average of the scores of all assessors, except for questions with a > 25% discrepancy between the ratings given by the assessors, which were again discussed and rated. The Perfil software automatically calculated the final score, taking into account the weights of the EFQM criteria. In this phase, the external consultant, who was an official licensee in Self-Assessment of the EFQM excellence model, worked directly with the assessment team in order to guarantee the correct application of the methodology and to ensure that the scores assigned for each question were in line with the standards of the model.

EFQM excellence award and certification methods

Recognition by the *Management Excellence Club (MEC)*, which is the official representative of the EFQM for Spain, was sought by the PD by presenting the validated self-assessment and an EFQM report on the 9 criteria of the model. For each certification, external certifiers accredited by the MEC and independent evaluators accredited by the MEC and the EFQM visited the PD and evaluated the quality of PD management.

The assessment process implied a multi-day visit to the PD where certifiers and evaluators toured key operational areas, held discussions with the PD management team, interviewed employees and reviewed documents and data. As a result, the evaluation team drew up an Evaluation Report that included strengths and areas for improvement. They proposed a level of Seal of Excellence, which was subsequently reviewed and approved by the MEC.

As mentioned above, the evaluation method used during the certification process was the *RADAR matrix*.⁹ Using this tool, each criterion part was assessed and a score agreed. The scores were then combined to produce a total score for each of the 9 criteria. A weighting was then applied to generate an overall score from 0 to 1000 points (Appendix 3).

Results

The EFQM was a valuable framework for the periodic assessment of PD performance. The issues covered by the 32 sub-criteria of the model

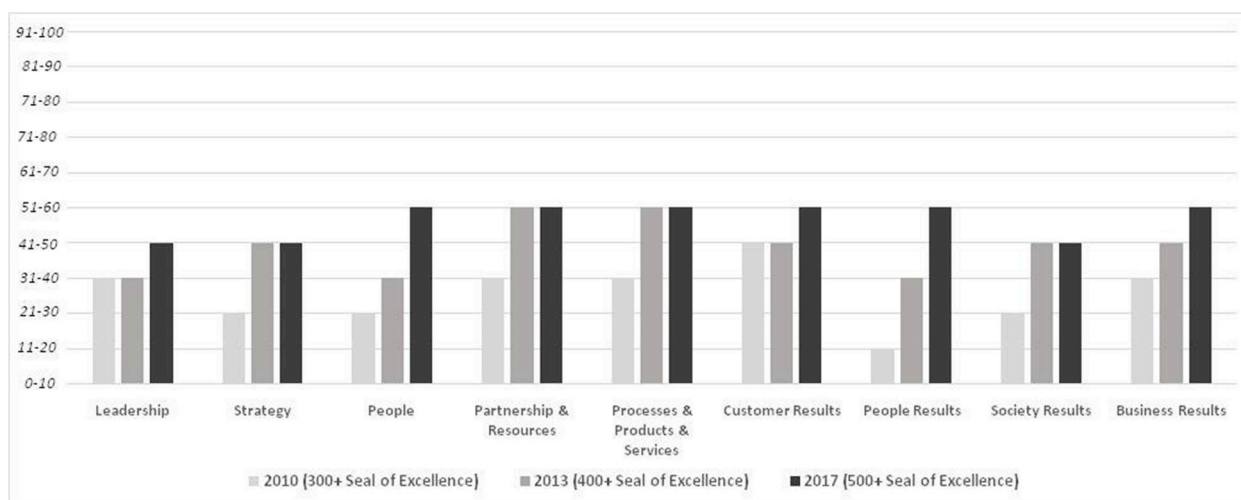


Fig. 2. Scores obtained in the external evaluations.

Table 1

Main initiatives implemented between 2008 and 2017.

Criterion 1: Leadership	<ul style="list-style-type: none"> -Definition of the PD's mission, vision, and values -Establishment of a Steering Committee to improve communication and facilitate decision-making
Criterion 2: Policy and Strategy	<ul style="list-style-type: none"> -Improvement in leadership with the implementation of a leader evaluation system using a 180° feedback technique -Strategic planning for the 2012–2016 and 2017–2020 cycles, with a structured assessment of the needs and expectations of all groups of interest and long-term goals -Strategic planning deployed to annual operational plans, with short-term objectives and assignment of responsibilities -Implementation of a scorecard and annual SWOT analysis according to stakeholders' needs and PD performance -Creation of the Pharmacy Innovation Center (<i>iPharma</i>) to conduct technology monitoring and promote the design and evaluation of new technologies/services; Strategic planning for research and innovation, with specific indicators
Criterion 3: People	<ul style="list-style-type: none"> -Development of an external communication plan to maximize the projection of the PD in the health sector -Creation of a welcome plan for pharmacists and nursing staff -Implementation of a work climate survey -Reorganization and specialization of pharmacy staff by area of knowledge -Implementation of individualized development plans and structured training plans for pharmacists -Development of a pharmacotherapy updating program, whose results are extended weekly through Twitter -Implementation of an employee recognition program which involves attendance at conferences/courses, benefit of fellowships and prizes, and reorganization of daily activities to promote scientific research
Criterion 4: Partnerships and resources	<ul style="list-style-type: none"> -Improvement in partnership management, with objectives, monitoring and improvement actions defined for each alliance -Development of a system for evaluating drug providers to facilitate decision making during provider selection -Implementation of surveys for partners and drug providers -Systematization of innovation management and implementation of information systems technologies in all phases of the drug use process: i. CPOE in all hospital departments. ii. Advanced CDS system to support pharmaceutical validation; iii. Traceability system with barcode verification and high-resolution imaging for chemotherapy compounding; iv. Automated dispensing cabinets linked to the CPOE in all hospital wards; v. e-MAR in all hospital wards (with the exception of critical units); vi. Smart infusion pumps for drug administration in critical units; vii. Barcode control for chemotherapy administration; viii. Robotization of dispensing in the Outpatient Pharmacy; ix. Home follow-up of oncology-hematology patients using an in-house development app
Criterion 5: Processes	<ul style="list-style-type: none"> -Definition of the process map of the PD (including new processes such as Leadership, External Communication, and Partnership Management), assignment of the person responsible for each process and supervision through the Process Control Card, with monitoring indicators -Establishment of operational management meetings within each area of the PD in order to improve internal management -Improvement of customer surveys resulting in several projects to optimize PD processes & services: i. Expansion of CPOE and pharmacy validation to all hospital departments; ii. Inclusion of two pharmacists in the working team of the Emergency Department and Oncology Outpatient facility; iii. Establishment of a working group with nursing staff of the hospital in order to improve the procedures and schedules for drug dispensing; iv. Implementation of 12 specialized pharmaceutical care outpatient consults; v. Re-assessment of pediatric pharmaceutical care in order to improve adherence to treatment through play (<i>Farmaventura Project</i>); vi. Extension of the opening hours of the Outpatient Pharmacy, and vii. Provision of pharmaceutical care services to oncology patients directly from their homes

CDS: Clinical Decision Support; CPOE: Computerized Prescription Order Entry; e-MAR: Electronic Medication Administration Record; PD: Pharmacy Department; SWOT: Strengths, Weaknesses, Opportunities, and Threats.

were relevant, although for some sub-criteria (ie. those related to staff remuneration or working conditions), an effort was needed to narrow the focus to areas that were directly controlled at the level of the PD.

As for the results of the three assessment cycles performed, Fig. 2 shows the scores obtained for the different criteria of the EFQM model. In the last assessment, all criteria were between 40% and 50% of the total score, reflecting more homogeneous development in all aspects of management.

Table 1 summarizes the most important initiatives carried out between the three assessments for each Enabler's criteria of the model. With regard to “leadership”, a special effort was made to improve communication and to promote participation and decision making, so that individual professionals could develop leadership skills and gain flexibility and responsiveness in their area of expertise. For example, a Steering Committee was created. This comprised the Director of the PD, the Assistant Director, 4 Pharmacist Coordinators, and the Director of Nursing and was intended to establish the strategic framework and ensure its understanding throughout the PD, facilitate decision-making, involve all the staff in short-term action plans, and evaluate the performance of the PD on a quarterly basis.

In relation to the second criterion of the model “Policy and strategy”, since 2011, the Steering Committee has performed an annual SWOT analysis, according to current stakeholder's needs and the performance of the PD. The analysis is used for each strategic reflection and definition of the annual plans. Performance was analyzed using a custom scorecard with short- and long-term indicators covering patient safety, drug effectiveness, efficiency of the PD (return on investment), professionals' scientific and technical knowledge, customer satisfaction, and social impact. In order to address one of the main strategic goals of

the organization—improving the safety and effectiveness of pharmacotherapy—the PD created *iPharma*, a pharmacy innovation center that promotes the design and evaluation of new technologies and services and their incorporation into healthcare practice. *iPharma* established its own strategic plan for 2012–2016 and 2017–2020 cycles and defined the research lines and projects within the organization and the objectives with respect to competitive funding, patents, and impact factor of scientific publications.

In the area of “People”, three highly relevant projects were developed. First, a work climate survey was implemented in 2008. The results led to a specific plan for improving the satisfaction of nursing staff, which had generated a significantly lower degree of satisfaction than that of the pharmacists. Among other actions for nursing staff, monthly meetings were established, the welcome plan and their rotation program for the different areas of the PD were improved, a training program in drug compounding was developed, and participation in external courses was defined. Second, the pharmacy staff were reorganized by clinical areas, with the objectives of achieving high scientific-technical knowledge, providing more specialized, continuous patient care and improving communication with medical and nursing staff. And third, individualized professional development plans were defined for regular evaluation of knowledge, skills, and compliance with performance targets.

In the fourth criterion “Partnerships and resources”, the PD formalized the partnerships for healthcare activities and for teaching, research, and innovation by establishing agreements, objectives, monitoring, and improvement actions. As for resources, throughout this period, the PD provided strong leadership in implementing new information technologies for the safe use of medicines in the hospital,

from prescription to administration. Some examples of these technological innovations are also detailed in Table 1.

In the area of "Processes", the Process Management System of the PD had already been certified by ISO 9001, thus implying adherence to high standards in terms of design, monitoring, and improvement of processes. Nevertheless, many more actions were undertaken. For example, weekly operational sessions were established within each of the PD areas, so that all professionals were involved in the monitoring of the process and participated in the detection and resolution of incidents. Further improvements were made in the implementation of the continuous survey and in the organization and development of response actions. For example, the surveys conducted on the hospital staff identified the need for pharmacists to work more closely with the patients and staff of the Emergency Department and the Oncology Outpatient Clinic, so that two pharmacists were integrated into both healthcare teams, and an app was created to provide oncology patients with individualized pharmacotherapeutic follow-up directly from their homes. Other significant improvement initiatives in processes are detailed in Table 1.

Finally, with respect to results, some examples of the key indicators for each of the criteria are shown in Table 2. The correct design and implementation of the Enabler's criteria positively affected the performance of the PD in terms of pharmacotherapy safety and efficiency, productivity, customer and staff satisfaction, and social recognition. The indicators related to the safety and efficiency of pharmacotherapy, such as the *ISMP Medication Safety Self Assessment*[®] index (which

achieved a score of 82.7% in 2017), the number of medication errors prevented by the pharmacy staff (3479 in 2017), and the cost savings generated by the PD (€32.7 million in 2017) continued to grow over the years. These results were possible thanks to the following: (i) the major technological renovation carried out in the drug use process in the hospital, with the implementation of automated prescription and dispensing, thus enabling close monitoring of patients with high-risk drugs; (ii) the specialization of pharmacists by clinical area and their integration into multidisciplinary teams for the development of treatment guidelines, validation of prescriptions, and monitoring of patients health outcomes; (iii) the development of an advanced clinical decision support system for pharmaceutical interventions; (iv) the increase in the centralized compounding of intravenous mixtures; and (v) the reduction in drug costs resulting from negotiation with suppliers. It is worth noting the significant increase in other indicators, such as the number of drug evaluation reports produced (up to 400 in 2017), which is due to the increasing commercialization of new oncology drugs and the allocation of greater pharmacy resources to undertake this work, and the number of pharmaceutical care outpatient consults (3796 in 2017) as a result of the implementation of specialized consults for these patients. The PD also maintained its efficiency growth trend, as shown by the reduction in productivity costs (from €0.92 to €0.49 per relative value unit produced, 46.7% reduction). With regard to customer satisfaction, since 2013, patient and physician satisfaction have remained at high levels (> 7.5 points out of 10), although the satisfaction of nursing staff remained practically stable in 7 points. With respect to

Table 2

Key results over time.

Criterion	Indicator	Goal of the PD on which impact ^a	2008	2010 (300 + SE)	2013 (400 + SE)	2017 (500 + SE)
Criterion 6: Customer results	No. of beds (%) with CPOE, on-line pharmacy validation, and automatic dispensing	1	595 (42%)	927 (66%)	992 (71%)	1100 (84%)
	No. RVUs	1, 3	ND	4,826,448	6,023,355	6,926,118
	No. of drug evaluation reports	1	23	39	97	400
	No. of sterile intravenous mixtures	1	84,090	91,109	105,657	128,326
	No. of pharmaceutical care outpatient consults (excluding hepatitis C)	1	766	845	1554	3796
	Average score on outpatient satisfaction	2	7.32	7.65	8.38	8.30
	Average score on physician satisfaction	2	7.42	ND	8.51	7.53
Criterion 7: People results	Average score on nursing staff satisfaction	2	ND	6.08	7.23	6.94
	Average global score on the work climate survey	5	7.36	8.34	8.54	8.84
Criterion 8: Society results	No. of training courses received by pharmacy staff	3, 5	ND	ND	55	76
	No. of training courses given by pharmacy staff	4	13	20	44	52
	No. in the official pharmacy internship examination (mean)	4	5.30	5.00	3.37	3.12
Criterion 9: Key performance results	No. of external residents receiving training in the PD	4	8	8	13	23
	No. of clinical trials	3, 4	209	211	277	487
	Average score on clinical trial monitors satisfaction	2	9.30	9.48	9.50	9.53
	No. of research projects	3	5	13	27	27
	Annual impact factor of scientific publications	3, 4, 5	12.32	19.14	53.37	39.87
	No. of visits received by other organizations	4	18	12	24	46
	ISMP Medication Safety Self Assessment ^b index	1	ND	70.18%	72.59%	82.68%
No. of medication errors intercepted	1	722	724	1706	3479	
Cost savings generated by the PD (million €) (excluding hepatitis C)	1	13.65	21.07	21.18	32.71	
Efficiency (€ saved per € invested in the PD)	1, 3	3.36	5.25	5.64	9.57	
Cost-effectiveness (Cost in € per RVU)	3	0.92	0.83	0.62	0.49	
No. of Twitter followers ^c	4	ND	ND	ND	1764	
No. of mentions in the media	4	ND	ND	45	87	

CPOE: Computerized Prescription Order Entry; ND, no data (the measurement was established later or is taken every 2 or 3 years); PD: Pharmacy Department RVU: Relative Value Unit; SE: Seal of Excellence.

^a Goal 1: Provide a safe and efficient use of pharmacotherapy; Goal 2: Achieve high customer satisfaction; Goal 3: Achieve high scientific-technical knowledge; Goal 4: Be a reference in the healthcare sector; Goal 5: Build a team of competent and committed people.

^b The average score for Spanish hospitals in 2017 was 52%.

^c The Twitter account of the PD was created in 2015.

“People results”, there was an increase in the average global score in the work climate survey, with a very significant increase in the satisfaction of nursing staff (from 7.0 in 2010 to 8.72 in 2017, approaching that of the pharmacy staff [9.58 in 2017]). In agreement with these results, an increase was recorded in training hours received and provided and the number of scientific publications, both of which are strong motivational factors for professionals. Specifically, in 2014, the greater degree of staff involvement in research and innovation activities enabled the consolidation of the Research Group of the PD within the Health Research Institute of the hospital. Finally, it should be noted the PD was the first PD in the Community of Madrid to be chosen for specialized pharmacist training during the 10 years of this study. The efforts of the PD were recognized officially in 2012 through the Award of Excellence and Quality of Public Service of the Community of Madrid and in 2017 and 2018 by the MERCO Spanish Corporate Reputation Report, in which it was classed as the best PD in Spain.

Discussion

This study reports on the EFQM model as a framework for the assessment of quality over a 10-year period. In this case, this included the use of ISO as a key tool integrated in the “Processes” criterion of the EFQM model.

All EFQM criteria improved, and this improvement was especially noticeable in “People” and “People results”, mainly owing to the introduction of regular measurements of satisfaction and motivation and the implementation of individualized development plans for pharmacists. Although some areas in “People results” do not fall into the PD director's area of decision-making (ie. working and safety conditions, resources, and remuneration), a significant effort was made to improve other areas such as professional development, empowerment, participation, and recognition, particularly for nursing staff. Other EFQM criteria to be highlighted, in this case for maintaining scores > 50% since 2013, are “Processes” and “Partnership & resources”. The first was associated with the implementation of ISO 9001 and the numerous actions aimed at improving the processes carried out. The second was mostly associated with the creation of the Pharmacy Innovation Center, which facilitated the systematization of innovation and research activities and the development of strategic partnerships for the implementation of new technologies and services. The continuous improvement in this criterion allowed the hospital to become the first in Europe with a fully automated drug use process, from prescription to administration.

This study shows other positive results such as those related to drug safety, efficiency, and productivity, as well as in patient and physician satisfaction. Nursing staff satisfaction was the only indicator that did not perform so well, probably because of nurse managers were under-represented in the surveys. With this subgroup, PD work more directly and satisfaction index always remained above 8 points out of 10.

Experience reported in the healthcare sector related to the use of the EFQM model in Europe shows that this approach can help organizations to perform better.^{2,8,11–14} In this case, the model proved to be a valuable tool that enabled to undertake an in-depth review of PD management, making it possible to more clearly identify the key objectives and the capacities and resources necessary to reach them. It was especially helpful in emphasizing the creativity and innovative capacity of the PD and in implementing added-value pharmacy services and improving staff satisfaction. Recognition in the form of successive European Seals of Excellence increased staff motivation during the study period and provided complementary information to the self-assessments through the team of external evaluators. On the other hand, staff found the EFQM approach difficult to understand, given that it is a non-specific model. The methodological support of the external consultant and the hospital's Quality Improvement Department, which facilitated training and experience with the use of the EFQM model was critical for effective implementation. Likewise, this experience shows

that it is not always possible to implement initiatives in areas of interest related to the model at departmental level, given that many matters are beyond the control of the director and staff. This limitation has also been reported elsewhere⁸ and also in whole healthcare organizations in the public sector.¹⁵ In this case, the PD is trying to overcome this limitation by delimiting the scope of action of quality improvement projects, even though this entails limiting the capacity for improvement. Finally, the difficulty in arranging elements of comparison with other PDs, especially in criteria other than “Processes”, is worthy of note. Benchmarking is a unique opportunity for learning and improving performance and, therefore, is embedded in all the Concepts and Criteria of the EFQM model. However, since PD are not familiar with the use of this model, comparative results were not available for some indicators, such as those related to staff satisfaction and social recognition.

Limitations

This study is subject to a series of limitations. First, any interpretation of the causal relationship between the methods described and the results obtained is restricted. Second, the specific characteristics of this project, which was carried out in the central service of a relatively large public hospital with a wide variety of internal and external customers and with considerable experience in process improvement and implementation of technologies, considerably affected its development. Consequently, these results could not be obtained in departments with different characteristics. Nevertheless, despite these limitations, these results could help other departments to implement similar processes, given that this is one of the longest experiences reported and the first experience in a PD.

Conclusions

This experience shows that the principles of the EFQM model are helpful at any organizational level, even on a small scale, such as in a pharmacy department. Working at a department level allows a high percentage of staff members to get involved in the project. The EFQM is a valuable framework for periodic assessment of PD performance, helping to identify actions for the continuous improvement of the safety and efficiency of pharmacotherapy, PD productivity, and customer and staff satisfaction. Evaluation and improvement of criteria beyond processes, such as leadership, partnerships, innovation and professional satisfaction, enable a more mature management system in the PD.

Conflicts of interest

The authors declare no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.sapharm.2019.08.030>.

References

1. Yousefinezhadi T, Mohamadi E, Safari Palangi H, Akbari Sari A. The effect of ISO 9001 and the EFQM model on improving hospital performance: a systematic review. *Iran Red Crescent Med J.* 2015;17:e23010.
2. Sánchez E, Letona J, González R, García M, Darpón J, Garay JI. A descriptive study of the implementation of the EFQM excellence model and underlying tools in the Basque Health Service. *Int J Qual Health Care.* 2006;18:58–65.
3. Model Criteria. European foundation for quality management. <http://www.efqm.org/efqm-model/model-criteria>, Accessed date: 13 August 2017.
4. Suárez E, Calvo-Mora A, Roldán JL, Perriñez-Cristóbal R. Quantitative research on the EFQM excellence model: a systematic literature review (1991–2015). *Eur Res Manag Bus Econ.* 2017;23:147–156.
5. Doleman HJ, ten Have S, Ahaus CTB. Empirical evidence on applying the European foundation for quality management excellence model, a literature review. *Total Qual Manag Bus Excell.* 2014;25:439–460.
6. Bou-Illusar JC, Escrig-Tena AB, Roca-Puig V, Beltrán-Martín I. An empirical assessment of the EFQM excellence model: evaluation as a TQM framework relative to the MBNQA model. *J Oper Manag.* 2009;27:1–22.
7. Boulter L, Bendell T, Dahlgaard J. Total quality beyond North America: a comparative analysis of the performance of European Excellence Award winners. *Int J Oper Prod Manag.* 2013;33:197–215.
8. Vallejo P, Ruiz-Sancho A, Domínguez M, et al. Improving quality at the hospital psychiatric ward level through the use of the EFQM model. *Int J Qual Health Care.* 2007;19:74–79.
9. EFQM excellence model. <https://www.efqm.org/index.php/efqm-model-2013/>, Accessed date: 23 July 2019.
10. Perfil, la herramienta para la evaluación integral de las organizaciones. <http://www.clubexcelencia.org/asesoria/herramienta-de-autoevaluacion-perfil>, Accessed date: 13 August 2017.
11. Favaretti C, De Pieri P, Torri E, et al. An EFQM excellence model for integrated healthcare governance. *Int J Health Care Qual Assur.* 2015;28:156–172.
12. Van Schoten S, De Blok C, Spreeuwenberg P, Groenewegen P, Wagner C. The EFQM Model as a framework for total quality management in healthcare: results of a longitudinal quantitative study. *Int J Oper Prod Manag.* 2016;36:901–922.
13. Moeller J. The EFQM Excellence Model. German experiences with the EFQM approach in health care. *Int J Qual Health Care.* 2001;13:45–49.
14. Nabitz U, Klazinga N, Walburg J. The EFQM excellence model: European and Dutch experiences with the EFQM approach in health care. European Foundation for Quality Management. *Int J Qual Health Care.* 2000;12:191–201.
15. Arcelay A, Lorenzo S, Bacigalupe M, Mira J, Ignacio I, Palacio F. Adaptation of a total quality improvement model to healthcare. *Rev Calid Asist.* 2000;15:184–192.