Knowledge management in Portuguese healthcare institutions

Sofía Gaspar Cruz, Maria Manuela Frederico Ferreira

1 Coimbra Hospital and University Center, Vascular Surgery Service. Coimbra, Portugal.
2 Coimbra Higher Nursing School, Scientific-Pedagogical Unit of Fundamental Nursing. Coimbra, Portugal.

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ABSTRACT
Knowledge management imposes itself as a pressing need for the organizations of several sectors of the economy, including healthcare. Objective: to evaluate the perception of healthcare institution collaborators in relation to knowledge management in the institution where they operate and analyze the existence of differences in this perception, based on the institution’s management model. Method: a study conducted in a sample consisting of 671 collaborators from 10 Portuguese healthcare institutions with different models of management. In order to assess the knowledge management perception, we used a score designed from and based on items from the scores available in the literature. Results: the perception of moderate knowledge management on the healthcare institutions and the statistically significant differences in knowledge management perception were evidenced in each management model. Conclusion: management knowledge takes place in healthcare institutions, and the current management model determines the way staff at these institutions manage their knowledge.

Descriptors: Knowledge; Knowledge Management; Health Services Administration; Health Facilities; People.

RESUMO
A gestão do conhecimento impõe-se como uma necessidade premente para as organizações de vários setores da economia, inclusive do setor da saúde. Objetivo: avaliar a percepção dos colaboradores de instituições de saúde relativamente à gestão do conhecimento na instituição onde atuam e analisar a existência de diferenças nessa percepção, em função do modelo de gestão da instituição. Método: estudo realizado numa amostra de 671 colaboradores de dez instituições de saúde portuguesas, com diferentes modelos de gestão. Para avaliar a percepção de gestão do conhecimento, utilizamos uma escala construída a partir de itens de escalas disponíveis na literatura. Resultados: evidenciam percepção de moderada gestão do conhecimento nas instituições de saúde e diferenças estatisticamente significativas na percepção de gestão do conhecimento, em cada modelo de gestão. Conclusão: a gestão do conhecimento ocorre nas instituições de saúde, e o modelo de gestão vigente influencia a forma como elas gerenciam o seu conhecimento.
Descritores: Conhecimento; Gestão do Conhecimento; Gestão de Serviços de Saúde; Instituições de Saúde; Pessoas.

RESUMEN
La gestión del conocimiento constituye necesidad apremiante para organizaciones de varios sectores económicos, incluyendo el sanitario. Objetivo: evaluar la percepción de colaboradores de instituciones de salud respecto de la gestión del conocimiento en la institución donde actúan, y analizar existencia de diferencias en dicha percepción, en función del modelo de gestión institucional. Método: estudio sobre muestra de 671 colaboradores de diez instituciones de salud portuguesas, con diferentes modelos de gestión. Para evaluar la percepción de gestión del conocimiento, utilizamos una escala construida a partir de ítems de escalas disponibles en la literatura. Resultados: se evidencia percepción de moderada gestión del conocimiento en las instituciones de salud, y diferencias estadísticamente significativas en percepción de gestión del conocimiento, en cada
INTRODUCTION

In a time marked by rapid and constant changes, competitiveness in organizations has become more and more dependent on new processes and market leadership. Whether or not it can lead to a unique set of resources that are difficult for competitors to copy, they must be mobilized as a creative range of distinctive skills and innovating capacities that can be constantly translated into new products. As a result of such requirements, and management as well, knowledge has emerged as a necessary solution for any kind of organization capable of coping with this issue.

Although the literature indicates a relationship between knowledge management and organizational performance based on the creation and maintenance of sustainable and competitive advantages, current knowledge management practices are not consistent enough and, in the majority of cases, not formalized\(^\text{[1]}\). This reality is cross-sectional to the organization of several sectors of activity.

In the case of healthcare institutions, consisting of intensive knowledge, it is easy to recognize that knowledge management will have an impact on organizational performance. Furthermore, following successive reform measures in which the Portuguese Healthcare System has been targeted due to excessive costs and the demand for improving organizational efficiency in a more and more competitive sector, knowledge management becomes a promising approach.

Consequently, vis-à-vis the lack of empirical studies in the healthcare context, it is relevant to study the reality of healthcare institutions in relation to knowledge management, particularly through a framework of different management models. Although it is still uncommon to find healthcare institutions structured around knowledge management projects, all of them will have initiatives that can be accommodated within its scope. In this sense, getting to know the perception of healthcare institution collaborators on knowledge management in the institution they operate helps to guide policies and organizational actions and support the decision-making of managers who pursue this area.

The globalization of the economy, fast-paced changes, and increasing competitiveness have generated considerable impacts on organizational structure, imposing the need for rethinking new organizational strategies in a manner that concentrates efforts on factors and programs that effectively represent an opportunity for differentiation.

The traditional dynamics of production are no longer enough to provide answers to current societal demands, characterized by an economy based on information and knowledge. Given this context, knowledge emerges as an innovating and differentiating factor for organizations as the main source of sustainable competitive advantages\(^\text{[2-3]}\) capable of facing the challenges of modern society. The true essence of the importance of this resource lies in its intangibility and its intrinsically incorporated nature in other words, on tacit knowledge. A tacit rather than explicit knowledge, which consists of skills and susceptible facts to be formally transmitted, is a kind of personal and subjective knowledge, as far as understanding the competencies, judgments, and intuitions individuals possesses, but that are hard to formalize, communicate, and share\(^\text{[4]}\). It is precisely from the inimitability and inherent difficulty of transferring tacit knowledge aspects considered fundamental for sustaining organizational competitive advantages that the importance of strategy conferred to a knowledge economy arises\(^\text{[5]}\).

In this respect, one of the challenges managers in any organization face is to retain their collaborators and, as a consequence, to offer growth opportunities in exchange for their commitment to reaching the organization's goals\(^\text{[6]}\), because the main organizational competitiveness differential lies with people.

However, in order to have knowledge converted into competitive advantage, more than just existing it is necessary to have it continuously comprehended, created, distributed, stored, shared, and used by the organization's collaborators\(^\text{[7]}\). In other words, "the mere presence of knowledge in the company aggregates little value, if it is not accessible and used as one of the most important resources"\(^\text{[8]}\). Hence the importance of management. In fact, even if knowledge could be treated as a product resulting from a good management in other area, for instance, a good human resources management, this incidental management is not coordinated, not broad enough and, consequently, it does not constitute a model for sustained success\(^\text{[9]}\). Out of the awareness that a casual approach to knowledge is not enough for organizations to succeed in the current and future economy came the need to accept organizational knowledge management as a key issue for dealing with management.

Although, since ancient times, knowledge has been the basis and result of human actions, the assertion and semantic conjugation among knowledge management concepts is relatively new\(^\text{[10-11]}\), an aspect that is controversial if it lacks conceptual stability.

Knowledge management has been defined under different perspectives, coexisting in the core literature as a plurality of conceptualizations. One of the clear definitions in the literature, and that we share, defines knowledge management as:

the creation and development of internal organizational conditions that bring together all processes related to knowledge (e.g., its creation/acquisition, sharing/dissemination, storage, recovery, use) in a sense of reaching the goal of the organization\(^\text{[12]}\).

\(\text{INTRODUCTION}\)
With a limited research history and tradition, knowledge management has been gaining an unparalleled, consistent, and important place not only in the academic environment, but also in the business world, as it has become recognized as a key element for organizational competitiveness. It is precisely due to this relationship between knowledge management and organizational performance, as a consequence of the creation of sustainable competitive advantages, that the growing interest in knowledge management has arisen.

This interest is also applicable to healthcare organizations, as a result of the need to develop sustainable competitive advantages over time\(^{(13)}\).

According to the literature, several advantages seem to come from the implementation of organizational knowledge management programs in healthcare institutions, in particular in the improvement of decision-making, reduction in medical errors, improvement of quality of care, and cost reduction\(^{(14)}\), which directly and indirectly seem to contribute to the efficiency and economic sustainability of the healthcare system.

The tangible adoption and implementation of knowledge management programs in the healthcare sector in institutions providing healthcare are promising. It is estimated that a well-implemented knowledge management program will change the efficiency of the healthcare system throughout the next few decades “into a more cost-effective, error-averse, and accountable public resource”\(^{(15)}\).

The context in which healthcare organizations operate is marked by the complexity of healthcare systems, by the substantial growth in scientific knowledge, by the impact of medical errors, by high investments in technology, and by emerging competitiveness associated with the implementation of new management models efficiency gains. Thus, it seems particularly suitable for the implementation of knowledge management.

In the literature, some studies indicate a moderate applicability of organizational processes relate to knowledge in Portuguese organizations\(^{(7,11,16-17)}\). However, these studies were developed in the local, industrial, and hotel sector framework, with a notorious lack of empirical studies on knowledge management in the healthcare sector, despite the advantages recognized. Thus, it is important to learn more about the reality of Portuguese healthcare institutions regarding knowledge management.

Focusing on efficiency, cost control, and competitiveness, we have seen, especially from the second half of the 1980s throughout Europe and Portugal is no exception a set of reform measures in healthcare systems. Among other aspects, these measures led to the adoption of new management models, namely, the corporatization of hospitals and the creation of groups of healthcare centers, in which matrix organizations are based on family healthcare units. These new and modern management models are aimed at providing more efficiency, precision, organizational and managerial flexibility; reduced bureaucracy, autonomy, and responsibility; and continuous improvement in healthcare quality.

A recognition of the importance of management knowledge as the main source of competitive advantages, applicable to any kind of organization during broad implementation of new management models in National Healthcare Service institutions, adds more value to the study on knowledge management perception in several healthcare institution models. This presupposes that the management model of healthcare units plays a key role in different practices and in its own context.

Thus, these research objectives can be defined as the evaluation of the collaborators’ perceptions on healthcare institutions according to knowledge management in the institution they operate in and an analysis of the differences in perception of the healthcare institution management model.

**METHOD**

**Type of study: Quantitative and cross-sectional**

**Sample**

Different collaborators (nurses, physicians, operational and administrative staff, and diagnosis and therapy technicians) from 10 Portuguese public healthcare institutions participated and were organized into three management models: the Public Administration Sector (PAS) sector; Corporate Public Enterprise (CPE); and a Family Healthcare Unit model (FHU). The selection of the healthcare institutions by the researcher was based on accessibility/proximity criterion and the current management model. The questionnaires were distributed to all collaborators, as long as they had at least six months of professional practice in the healthcare institution, because prior to this time, the respondents would not have the necessary information to express an informed opinion. Data collection took place in different healthcare institutions during the second half of September and mid-December of 2009, and mid-January and at the end of March of 2010.

**Data collection tool**

The questionnaire consisted of two set of questions. The first included the knowledge management score, using items from measurement tools available in the literature, and the second referred to the socio-demographic and professional characterization of the respondents. The initial version of the knowledge management score started with 69 items; however, 10 items were eliminated following the pretest, whereas the Cronbach’s alpha value moved from 0.947 to 0.949. Consequently, this resulted in a set of 59 items integrating the final version of the data collection tool. Using a Likert scale of 5 points (from 1 – strongly disagree to 5 – strongly agree), the respondents were asked to indicate the extent of agreement in relation to the set of assertions intended for evaluating the occurrence of knowledge management in public healthcare institutions. The items were encoded in such a way that the higher values represented a higher perception of knowledge management in the healthcare institution in question.

**Ethical-legal considerations**

During the study, ethical-legal procedures were observed that included formal authorization requests for data collection sent to hospital administration council chairmen, executive
directors of healthcare groups, or coordinators of family healthcare units where the study took place. Procedures were also adopted for obtaining an informed consent form from study participants. Each questionnaire was followed by an information sheet indicating the title and scope of the study, the objectives, and contact information for the main researcher. In this information sheet, guarantees were given to the respondents with regard to the confidentiality and anonymity of data handling, aspects that were again reinforced at the beginning of the questionnaire. The return of the completed questionnaire meant acceptance to participate in the study.

**Procedures**

The distribution of the questionnaires was carried out by the researcher through the delivery of envelopes, with the data collecting tool, to the individuals responsible for the institution’s personnel, or to a key person in each institution unit or department who turned out to be valuable not only in distributing the questionnaires to the rest of the personnel, but also getting the questionnaires back. The period of time agreed upon between distribution and collection of the questionnaires was from two to three weeks.

**Data handling**

The collected data were analyzed with Statistical Package for the Social Sciences (SPSS) software, version 18 for Windows, establishing a level of statistical significance of 5% ($p \leq 0.05$). Descriptive statistics were used with measures of central tendency and dispersion and inferential statistics (ANOVA), whereas the conditions for using parametric tests were guaranteed. In addition to an interval scale for the knowledge management variable (dependent variable), its distribution was normal, as confirmed by the normally distributed Kolmogorov-Smirnov test, with a Lilliefors correction ($p = 0.200$).

**RESULTS**

**Respondent characterization**

The survey was conducted among 671 collaborators from 10 Portuguese public healthcare institutions. Of these, 374 (55.74%) held positions in PAS healthcare model institutions, 260 (38.75%) held positions in CPE healthcare model institutions, and 37 (5.51%) held positions in FHU healthcare model institutions (Table 1). In relation to the professional group, most respondents were nurses (62.30%), 12.70% were operational assistants, 10.30% were administrative staff, 8.60% were diagnosis and therapy technicians, and 2.20% were physicians. Regarding years in the career and years in the healthcare institution, the survey presents a mean value of 14.12 years (standard deviation [SD] = 9.53) and 11.99 years (SD = 9.22), respectively (Table 2).

Providing details on the characterization of the respondents by management models, the PAS model referred to the professional group: 63.10% were nurses; 12.30% were operational assistants; 12% were administrative staff; 7.50% were diagnosis and therapy technicians; and 0.50% were physicians (Table 1). In relation to gender, most individuals were female (76.20%).

As Table 1 shows, in the CPE model the female gender also predominated (67.30%). As for the professional group, nurses predominated (62.70%), followed by operational assistants (15.00%), diagnosis and therapy technicians (11.50%), administrative staff (7.30%), and finally, physicians (0.40%). In relation to respondent age, the mean value was 37.15 years (SD = 9.41) (Table 2). As for professional experience, the mean was 13.86 years (SD = 9.77%), whereas the years in the institution assumed a mean value of 11.68 (SD = 9.01).

Similar to the previously mentioned models, in the FHU model the female gender predominated (81.10%) (Table 1).

**Table 1** – Sample characterization according to professional category and gender, aggregate and by management model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Aggregate sample</th>
<th>Public Administration Sector Model</th>
<th>Corporate Public Enterprise Model</th>
<th>Family Healthcare Unit Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional category</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Physician</td>
<td>15</td>
<td>2.20</td>
<td>2</td>
<td>0.50</td>
</tr>
<tr>
<td>Nurse</td>
<td>418</td>
<td>62.30</td>
<td>236</td>
<td>63.10</td>
</tr>
<tr>
<td>Diagnosis and therapy technician</td>
<td>58</td>
<td>8.60</td>
<td>28</td>
<td>7.50</td>
</tr>
<tr>
<td>Operational assistant</td>
<td>85</td>
<td>12.70</td>
<td>46</td>
<td>12.30</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>69</td>
<td>10.30</td>
<td>45</td>
<td>12.00</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>1.80</td>
<td>10</td>
<td>2.70</td>
</tr>
<tr>
<td>Non-response</td>
<td>14</td>
<td>2.10</td>
<td>7</td>
<td>1.90</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>142</td>
<td>21.20</td>
<td>72</td>
<td>19.30</td>
</tr>
<tr>
<td>Female</td>
<td>490</td>
<td>73.00</td>
<td>285</td>
<td>76.20</td>
</tr>
<tr>
<td>Non-response</td>
<td>39</td>
<td>5.80</td>
<td>17</td>
<td>4.50</td>
</tr>
<tr>
<td>Total</td>
<td>671</td>
<td>100.00</td>
<td>374</td>
<td>55.74</td>
</tr>
</tbody>
</table>
As for the professional group they belonged to, 51.40% of the individuals were nurses, 32.40% were physicians, and 13.50% were administrative staff. The mean age of the respondents was 37.15 years (SD = 9.41). Regarding the professional experience variables and years in the institution, the mean was 13.64 years (SD = 8.73) for the former and 11.68 years (SD = 9.01) for the latter (Table 2).

### Knowledge management perception on healthcare institutions

According to the perception of several organizational players questioned, the knowledge management mean value in public healthcare institutions is 3.37 ± 0.62 (scale varies between 1 and 5), whereas the minimum mean value is 1.58 and the maximum mean value is 4.96 (Table 3). The results show that, according to the perception of several organizational participants surveyed, higher knowledge management takes place in the FHU and, in turn, the PAS healthcare institution model was the lowest.

### DISCUSSION

The knowledge management mean value obtained from the sample of healthcare institutions during the study (3.37 ± 0.62, on a scale from 1 to 5), similar to what happens in Portuguese organizations in general, shows that knowledge management takes place in Portuguese healthcare institutions, even though not in a structured manner, revealing some isolated initiatives.

Knowledge management is a relatively new subject area, still approached in its initial stages in the healthcare sector. Healthcare institutions have been late in adopting the knowledge management concept, and are just now starting to take the first approaches to this field. For instance, in the United Kingdom, few hospitals have implemented knowledge management; however, due to its growing importance, particularly for improving the quality of decision-making, UK healthcare institutions have been encouraged to develop structured systems based on knowledge. The visibility of the implementation and development of knowledge management in the healthcare sector are promising signs of a growing awareness of the importance of this subject area.
sector is virtually zero\(^{20}\), and this might have to do with the fact that many healthcare institutions’ top managers do not have a clear picture of this concept\(^{21}\). As expected, empirical studies that reflect the reality of knowledge management in the healthcare sector are virtually nonexistent, not only on the national level, but also in the international context.

However, despite the lack of national studies on knowledge management in the healthcare sector, the results obtained in the current study show certain points in line with the empirical studies conducted on private and public organizations in Portugal from other areas of activity. Study results developed in the industrial sector\(^{11,16}\), hotel sector\(^{17}\), and local public sector\(^{17}\) show a moderate applicability of organizational processes related to knowledge in the organizational structure of respective organizational contexts. Yet, current knowledge management practices have been lacking in consistency and, for the most part, are not formalized\(^{11}\). Tackling this issue, a study conducted in 2011 involving 289 organizations from several areas of activity in Portugal showed that the vast majority of organizations still have an informal approach to knowledge management, whereas only one in 10 organizations opt for a strategic approach\(^{22}\).

Consequently, at a time when private management policies and practices are comprehensively implemented by public healthcare institutions, based on the argument that it is essential to increase the efficiency, effectiveness, and quality of healthcare systems, such results can only become possible if all organizational collaborators become involved in the reform process, providing their knowledge, particularly the tacit knowledge, the major strength for improving organizational performance. In this respect, and based on the results obtained, we have to admit that knowledge management is already an integral part of the organizational life of healthcare institutions, but it is up to their managers to optimize the existent practices, integrating them into a knowledge management structured project that allows maximizing the potential of all collaborators with the goal of achieving organizational objectives.

Keeping in mind that the way each healthcare institution is organized and operates is supported by the current management model, this same model can determine the way a healthcare unit establishes and develops a set of needed and supporting conditions for the organizational processes related to knowledge in other words, the way the institution manages its knowledge. The knowledge management mean value, obtained in the sample related to each of the management models in our analysis, confirms what was not said, allowing to distinguish healthcare institutions in accordance with the management model. According to the perception of the organizational collaborators, the knowledge management mean values are 3.42 \(\pm\) 0.53 in the sample of the CPE healthcare institution model, 3.25 \(\pm\) 0.63 in the sample of the PAS healthcare institution model, and 4.28 \(\pm\) 0.36 for the FHU, with significant differences from a statistical point of view. Data related to the knowledge management mean values obtained from each management model allow us to draw a few conclusions. However, as the results are read, it should be kept in mind that while FHU refer to primary healthcare, the CPE and PAS models are related to differentiated healthcare (hospitals). Comparing the perceptions of organizational collaborators on the three knowledge management models, a higher knowledge management mean value is shown in the FHU sample, reflecting not only on the fact that the FHU have an underlying management philosophy that, somehow, translates into the corporatization of the services, but also the unit dimension (“dimension” meaning the number of collaborators). The “unit dimension” variable was not formally an object of study analysis; however, it could be relevant for the implementation of knowledge management projects. This variable has been included in some knowledge management studies, but above all as a component of statistical description, and not formally as an explanatory variable. Despite the notorious lack of studies analyzing the relationship between the dimension of the institution and knowledge management, a study conducted with industrial sector organizations revealed the nonexistence of statistically significant differences in knowledge management perceptions of the company dimension\(^{146}\). Regardless of the obtained result, and taking knowledge management as a commitment and involvement of all collaborators, we considered that the development of conditions that allow developing, promoting, and using all of its potential in achieving the organization’s objective optimizing knowledge could be more easily applied in institutions with smaller numbers of collaborators, prerequisites that deserve further research.

Comparing the knowledge management mean value with the hospital models (CPE and PAS), the results shown here also leave the impression that, based on corporate management principles and requirements, the organization and management of public healthcare institutions seem to constitute the managerial form that most contributes to their knowledge management. Although the reform measures in the PAS tend to shape the process of narrowing the gap between organizational and financial management in the state corporate sector\(^{23}\), the traditional rules of public services that still play a major role in the PAS seem to limit knowledge management initiatives/practices.

In view of the above, it is possible to assert that the public healthcare institution model is relevant to knowledge management, particularly the management models guided by corporate principles.

However, the current research shows some limitations. The first is the small sample size related to FHU. Therefore, it is important to replicate the study in larger samples, particularly in relation to the FHU samples. Other limitations that underpin the study are the exclusive use of a questionnaire as the single source of data collection. The use of other additional measurements for instance, an interview with top managers of healthcare institutions would have allowed greater substantiation for some of the achieved results.

Despite the limitations involved in the study, the emerging results represent a small contribution to the advancement of scientific knowledge in a field that lacks empirical research, especially in a virtually unexplored context such as the healthcare sector. Similar to what happens in other areas of activity, in the healthcare sector knowledge management initiatives and practices take place, although not in a structured manner. Therefore, managers of healthcare institutions should
optimize current knowledge management initiatives and practices, in line with organizational strategy, in order to achieve institutional objectives. Furthermore, measures that support the current reform of the Portuguese healthcare system seem to be facilitators of the implementation of knowledge management. In other words, knowledge management seems to have the road paved toward its own implementation in the context of Portuguese healthcare institutions.

However, it is important to emphasize that the results obtained must be put in perspective in the context of an exploratory study, as a first approach to a field of study that is rather unknown, taking into consideration its complexity and broad scope. Also crucial is the need and relevance of carrying out longitudinal studies that allow the confirmation (or not) of some of the main findings that guided this study. Furthermore, the study of context variables is equally relevant, especially the analysis of their relationship to knowledge management aimed at contributing to the success of the implementation of knowledge management programs in healthcare institutions, thus avoiding frustration, as has happened with some of the projects implemented in other areas of activity.

CONCLUSION

The current study was developed in an attempt to evaluate the perception of knowledge management in healthcare institutions, not only in the sense of recognizing the value and importance of knowledge as a consequence of its management in the productive processes of any organization, but also seizing the moment in which reform measures are becoming widespread under the new public management, cross-sectional to hospitals and groups of healthcare centers, in achieving efficiency and sustainability in the healthcare system.

The results obtained allow the conclusion that, similar to what takes place in other areas of activity (industrial, hotel, and local level), moderate initiatives at the knowledge management level also occur in healthcare institutions, although not as a structured project, in line with an organizational strategy.

The management model of the healthcare unit was decisive for knowledge management, as different perceptions of knowledge management could be drawn from each management model. It was at the healthcare institutions with management models based on private corporate policies and practices that the higher mean values were found related to knowledge management. This shows that institutions guided by those principles are the ones with a greater number of conditions or activities that bring about knowledge creation, exchange, storage, recovery, and use. Consequently, the options that are bringing about the current reform of the Portuguese healthcare system, with emphasis put on the corporatization of hospitals and the creation of FHU, seem to be creating the right conditions for the implementation of knowledge management.

REFERENCES


