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# PROJECT MANAGEMENT AND PRACTITIONERS IN THE HEALTH SECTOR: FROM THE QUEBEC HEALTHCARE SYSTEM PERSPECTIVE TO PM LITERATURE REVIEW

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## ABSTRACT

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More and more health care systems are taking the project management route. The present article sets out the results of a literature review (who was produced with the help of ABI/INFORM GLOBAL and covers the period from 1979 to May 2017 inclusively) dealing with project management in the health sector. Consequently, this paper is not a comparative analysis of Quebec's health systems vis-à-vis the rest of the world's. Nor is it a theoretical analysis of project management and strategic health systems management. This paper is of interest to practitioners who must manage their health services and social services on a by-project basis because their organization has turned onto the project path. So, what does the discipline of Project Management (a discipline that sees itself as being oriented to practitioners) have to offer to practitioners in the health sector?

Results of the literature review indicate that the information technology project management in health sector is the favorite topic of researchers. Furthermore, very little of the research on health sector project management is published in the project management discipline's journals and, on the other hand, a minority of the articles reviewed make reference to the works that are published in these PM Journals. Although the present article review focuses only on articles with the key words "Health" and "Project Management", we can conclude that if project management wishes to become a discipline associated with health, it must promote the initiation of research that clearly identifies the real issues involved in a project and its management, in relation to the primary mission of health care systems: care, health services and social services.

This paper presents the importance given to project management in the health sector and the theme of health in project management. It demonstrates the lack of emphasis on project management as a lever for health care, health services and social services which is the primary mission of healthcare systems and its practitioners.

**KEYWORDS:** *Project Management, Health, Literature Review, Practitioner*

In today's context where many countries have debt overload, increasing government spending are a shared concern among western nations. Health care expenditure is a major portion of government budgets. According to the OECD (2016), health spending per inhabitant has doubled in the past 15 years, increasing from 1803 US\$/per capita in 2000 to 3453 US\$/per capita in 2015. As a result, special attention is given to the organization of health care and changes are made at both the structural and functional levels in order to improve the performance of the health care system.

Project management is presented as an approach that allows the implementation of strategic changes within organizations (Turner, 2009). It is also presented as a way of improving organizational performance (Crawford and Helm, 2009). Although project management appears to be the ideal approach to meet the challenge of operational improvement in order to bring about a better performance of health care systems (Shirley, 2011, Lavoie-Tremblay *et al.*, 2012, Aubry *et al.*, 2014), only Quebec, among all the OECD members, has made the "project" the tactical lever of its health care system.

In view of the increasingly greater space being given to projects and their management in health organizations and in the networks they form, what does the discipline of Project Management (a discipline that sees itself as being oriented to practitioners) have to offer to practitioners in the health sector? In order to answer that question, we have undertaken a review of scientific literature dealing with project management and health. Consequently, this paper This paper is not a comparative analysis of Quebec's health systems vis-à-vis the rest of the world's. Nor is it a theoretical analysis of project management and strategic health systems management. This paper is of interest to practitioners who must manage their health services and social services on a by-project basis because their organization has turned onto the project path.

In addition to the introduction and conclusion, the present article has four component sections. After defining the issues involved in using a project as a strategic tool in the health sector, we describe the method used to summarize the writings in order to examine how these issues are treated in scientific documentation. The articles examined are then classified under different topics which allows us to identify trending dynamics according to which themes were most favoured by authors from 1979 to May 2017 (inclusively). Finally, the bibliographies (collected articles) are analysed to determine to what extent they refer to knowledge published in the leading journals of project management.

## Projects as an effective lever in the Mission of Health Care and Health Services: The Case of Quebec

In Canada, the health care system is under provincial jurisdiction. Basically, it is a public health system that depends upon collaboration with the private sector (e.g. pharmacies, dentists, etc.) In Quebec, health and social services come under the authority of a single ministry. The Ministry of Health and Social Services (MSSS) defines the broad objectives that health and social services in Quebec must attain, and consequently, it establishes the organization and governance of the system, develops provincial policies and priority programs/services for Quebec, and ensures their delivery in the various administrative regions.

In 2004, the administrative regions were divided into territories on which new health establishments, Centres de Santé et de Services Sociaux (CSSS) (Health and Social Services Centres) were established. The CSSS are responsible for improving and maintaining the health and well-being of the people in the territory they serve, a task they must perform in collaboration with their local partners (medical clinics, community pharmacies, community organizations, etc.). Given this responsibility, the Ministry of Health and Social Services (MSSS) gave each Health and Social Services Centre (CSSS) the task of operationalizing its tactical initiative – the Clinical Project<sup>1</sup> – on each territory.

The Clinical Project, which seeks to improve the access, continuity and quality of the health care and services delivered to the people of Quebec, consists of two components: one being organizational and the other clinical. The organizational component is made up of a collection of services designed to meet the health and social services needs of the general population. The organizational component uses as its terms of reference the nine priority programs/services of the Quebec MSSS. Two of these programs/services correspond to the needs of the general population, namely, public health, and general services/clinical

and aid activities. The seven other programs are addressed to clients who are vulnerable or facing particular problems: loss of independence linked to old age, physical deficiencies, intellectual deficiencies and invasive developmental problems, youth in difficulties, addiction, mental health and physical health (MSSS, 2004). The clinical component, for its part, deals with concrete modalities for delivery of care and services in a manner that best meets the health and wellness needs specific to the inhabitants of each territory in Quebec.

In a few words, we can say that the Clinical Project consists on the one hand (organizational component), in determining the situation in a region in light of the objectives established by the nine priority programs/services of the MSSS, and at the same time in defining the need for health services. For example, following a diagnostic analysis on its territory, a Health and Social Services Centre determines that mental health problems are particularly acute among vulnerable, elderly persons in the territory. On the other hand (clinical component) the Clinical Project consists of conceiving and implementing concrete solutions and evaluating their effect in terms of the remedial actions brought to the situation. To follow-up on the example given, a Health and Social Services Centre will develop a Clinical Project, with the help of its local partners and psychological services (within the hospital centre, on an outpatient basis, etc.), that deals particularly with vulnerable and elderly persons with mental health problems.

Underlying the organizational and clinical components is an approach that closely resembles the classic project management process: feasibility, conception, implementation and evaluation (PMI, 2013). It is therefore not surprising that the Quebec Ministry of Health and Social Services (MSSS, 2004) would promote project management as the management approach for clinical projects. Indeed, this position on the part of the ministry is consistent with the actions of the ministry in an area other than that of clinical projects, and which consist of setting up in its establishments a project and performance offices. The organization and functioning of the project offices in Quebec health establishments have in fact been dealt with in different works (e.g., Aubry *et al.*, 2011, Lavoie-Tremblay *et al.*, 2012, Aubry *et al.*, 2014).

In research designed to take stock of clinical projects from 2008 to 2012 inclusively, Afzal and Gauthier (2014) noted that in Quebec health establishments (CSSS) few projects and performance offices were set up to benefit clinical

<sup>1</sup>Is the clinical project a project or is it not? We will not debate that question here. Especially since, according to the ontological, nominalist and virtualist viewpoints (Gauthier & Ika 2012), a project is anything that is designated as such or on which such a discourse as such is held. Thus the “clinical project” is called a project and Project Management is called upon to manage it.

project management. These results are astounding, given that the success of clinical projects (better access to, and continuity and quality of, health care and services) is a precondition for the general performance of the Quebec health care system (an improvement in the supply of health care and services). Is it possible that knowledge about the management of health care and services projects could be insufficient, and that at the same time limits the extent to which the project offices can contribute to the running of projects such as the clinical project?

Since April 2017, an extensive undertaking has been reforming the organization by project and by project office within the Quebec Health System. In fact, the proposed change brings forth to nine priorities/programs (e.g. access to first-line services; access to specialized services, etc.). These priorities/programs head up a diversity of projects whose various management stages are channeled under a new direction, namely, that of quality, evaluation, performance and ethics. Even though the organizational methods in each project may change, the question still remains: is there sufficient knowledge on the management of health care and health services projects to ensure their success?

In order to identify state-of-the-art knowledge on projects and their management in the health sector, we have done a systematic review of the Peer-Reviewed Literature. This initiative had four objectives: (1) to determine the number of scientific articles published on projects (and their management) in the health sector, (2) to identify the major topics covered by this literature, (3) to sketch a portrait of the variations over time in the number of published articles dealing with the identified topics, and finally, (4) to examine to what extent the contents of the three leading project management journals (*Project Management Journal*; *International Journal of Project Management*; *International Journal of Managing Project in Business*) served as a reference to the scientific articles collected in ABI/INFORM dealing with projects in the realm of health.

## Research Methods

Our systematic literature review takes its inspiration from the approach described by Ridley (2012). For the purposes of the present article, and beginning with the tabulation produced by ABI/INFORM, we established the profile of the

various types of knowledge produced in the health projects. We chose to concentrate on this data base, because according to many authors (see among others, Ika, 2009, Crawford *et al.*, 2006, Müller and Jugdev, 2012) ABI/INFORM is a major bibliographical resource on project management. ABI/INFORM, which was launched in the 1970s, is the most complete currently available data base on management. ABI/INFORM Global brings together more than 3 000 international and North American journals, including three leading journals on project management: *Project Management Journal*, *International Journal of Project Management*, *International Journal of Managing Projects in Business*. The words “health” and “project management” were used as subject headings in order to find peer-reviewed academic articles dealing with projects and their management in the health sector. Articles whose subject heading was “occupational health and safety” were subtracted from the results. In all, research into the ABI/INFORM Global data base allowed us to identify eighty-six (94) peer reviewed articles concerning project management in the health sector. These articles were published between 1979 and May 2017 inclusively.

Of these 94 articles, thirteen (13) were set aside: Anderson (2004), Ahmad *et al.* (2011), Thielst (2007), Chiochio *et al.* (2010), Jaafari (2007), Jacobsen (2008), Junior Water Prize Generates 2 Award-Winning projects (2011), Guinan *et al.*, (2013), Peter *et al.*, (2013), Mok, Han and Choi (2014), Raisinghani (2014), Harris *et al.* (2013), Liu and Deng (2015). These articles do not explicitly deal with projects and their management in the health sector. They focus on the range of business sectors (health being one of these sectors). They describe a prize awarded at recognition ceremonies for innovative projects. They deal with the issue of mental illness in organizations using projects, compared to the more classic organizations where book reviews and interviews with a CEO are still used. At the end of this exercise a total of eighty-one (81) articles were tabulated of which the vast majority (91%; 74/81) were published between 2000 and May 2017. In the following section, we bring out the major topics grouping the 81 articles examined, the whole of which gives an account of the evolution of publications on these themes between 1979 and May 2017.

## Project Management and Health: Major Topics

As a follow-up to the analysis of key words, we determined five major topics covered by the 81 articles examined: (1) Project Management (PM) and Clinical Care, Public Health Services and Social Services, (2) PM and Information Technologies, (3) PM and Health Administration, (4) PM as a Management Lever in the Health Sector, and, (5) PM and Construction. In the following sections, we will conduct a review of each of the five topics, beginning with the one that is at the very heart of the health system's mission: clinical care, public health services and social services.

### *PM and Clinical Care, Public Health Services and Social Services*

We mentioned above that the organizational component of projects in

Quebec's health system should be anchored to the nine priorities programs/services of the Quebec Ministry of Health and Social Services. The main focus of these nine priority programs/services is clinical care, public health services and social services. While there remain, around this health care and these health services, many challenges are to be met (Mintzberg, 2012), only 17% (14/81) of the articles examined deal with the management projects in clinical care, in public health services or in social services (see Figure 1). Figure 2 emphasizes the fact that the topic of clinical care, public health services and social services has long been neglected by authors. It is only beginning in 2004 that we can register a greater number of articles on this topic. Notwithstanding this increase, management of projects in clinical care, public health services and social services does not succeed in making the top of the list.

Figure 1 -

Number of scientific articles (in percentage) published on Project Management in the health sector by topics.

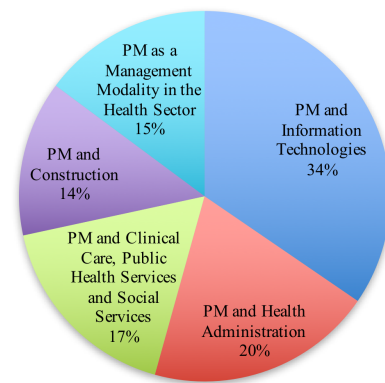
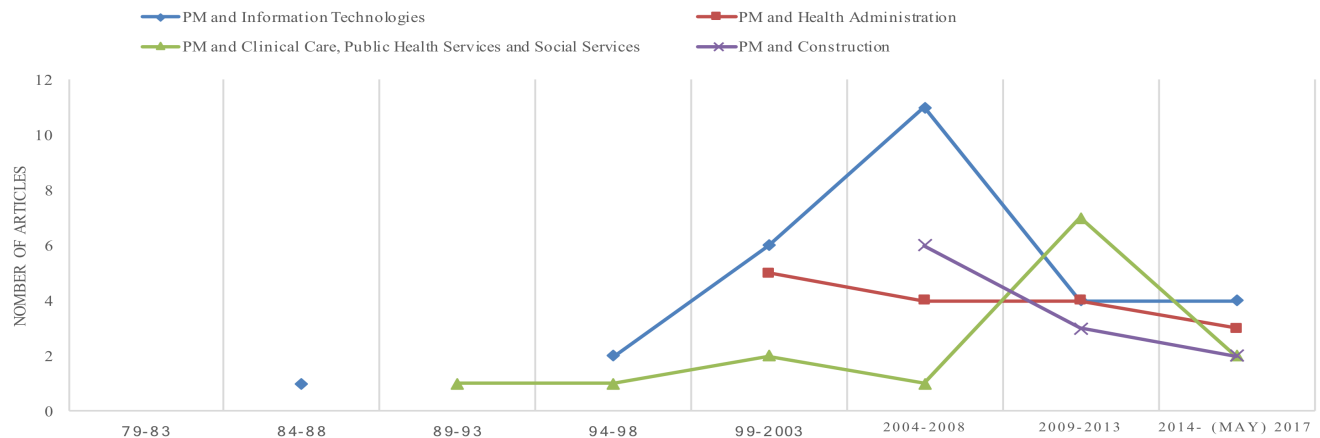


Figure 2 - Variations over time in the number of published articles between 1979 at May 2017 concerning: Project Management (PM) and Clinical Care, Public Health Services and Social Services; PM and Information Technologies; PM and Health Administration; PM and Construction.



By way of illustration, management of projects/programs in care or clinical services gets particular attention from Sanders (2002). He explains and describes how an endovascular surgery program was developed and implemented in a community hospital. The success of this program was the result of consultations with and involvement of all stakeholders in the project. According to Sanders (2002), with this new program, the hospital reduced the time for medical treatment, which allowed for major savings.

The management of public health and social services projects is also dealt with by various authors. For example, Abel and Cumming (1993) detail the evolution and implementation of a project for Homeless Male Alcoholics and Other Drug Abusers. The factors that favour implementation of an addiction project have also attracted the attention of MacLean *et al.* (2012). For their part, Claeýe and Jackson (2011) report the findings of a study on the possible gap in global inputs into the fight against HIV/AIDS and TB co-infection, and outputs in terms of results achieved. The research focus not only on the effectiveness of the managements of programs and projects, but rather the inappropriateness resulting from the lack of addressing cross-cultural issues. On the other hand, those projects dealing with the production of and access to “healthy” water and milk have also been analysed (see Lamichhane and Mangyo, 2011, Agenbag and Lues, 2009, Kiwanuka *et al.*, 2015).

Finally, on the one hand, management of health care and services projects is examined in the context of the community, and on the other hand, at the national level. Here are two examples. Tareen and Omar (1997) focus on the importance that community entry can have in the success of a health partnership and project in Pakistan. This is accomplished with the help of project management tools, but also thanks to the participative work of the community; it is necessary for the community to act and work together to guarantee the success of the project. Ramani and Mavalankar (2009), for their part, present tools and framework to assess the management capacity to run and manage a health program/project, state- or nation-wide in India. A complete list of the articles examined, dealing with the management of projects in clinical care, public health services or social services is set out in Table 1.

The topic of IT project management in the realm of health is especially well represented. More than a third of the articles examined (34%) are dedicated to this topic (see Figure 1 and Table 1 for the list of articles examined). These results are at least partially explained by the fact that ITs have become inevitable tools in the performance of health system in the Western countries (Trudel *et al.*, 2012). Besides, different researchers promote IT investment in the health sector. Paavola (2007) or Lin and Umoh (2002) maintain that, in order to reduce costs or to make the health sector more efficient, computerization and IT projects in the realm of health are assets beyond price in the medium- and long-term. Guah (2008) demonstrates for example that IT projects are more likely to succeed when they involve major monetary returns. Still according to Guah (2008), such projects call for long-term investment if the expected monetary gain is to be realized.

Given the investments made, it is expected that IT health projects will deliver the expected results. This is why certain authors (e.g. de Fickenscher and Bakerman, 2011, Liu and Lin, 2016, Helfert, 2009, Thielst, 2007, Hougham, 1996) propose the creation of a framework, a guideline or an analysis focusing on the determinants of success in the management, implementation and governance of IT projects.

On the other hand, still on the subject of health systems performance (the efficiency of health care services and the reduction in their associated costs), projects for the computerization of patient data are given special weight. For example, Lee (2010), Frohlich *et al.* (2007), Miller and Miller (2007) and Carr and Dimitrakakis (2003) focus on the advantages of computerizing all patient data in order to reduce medical errors, and to have access to information at all times, by any doctor, no matter in what locality or at what time, which would make the health care system more efficient and effective. Notably, this computerization would avoid the need for complementary visits and tests.

Although the majority of articles examined deal with information technologies, the popularity of this topic has declined from 2004 to 2009. Since 2009, the number of articles examining the topic of PM and information technology has remained relatively stable. However, during the same period (2009-May 2017) the number of publications examined with ABI/INFORM dealing with PM and

Topics	Bibliography
1. Project Management (PM) and Clinical Care, Public Health Services and Social Services	Abel and Cummings (1993); Agenbag and Lues (2009); Bell and Christina (2006); Claeÿ (2011); Kiwanuka <i>et al.</i> (2015); Lamichhane and Mangyo (2011); Larrison (2003); Lavoie-Tremblay <i>et al.</i> (2012); MacLean <i>et al.</i> (2012); Patterson <i>et al.</i> (2017); Ramani and Mavalankar (2009); Sanders (2002); Tareen and Omar (1997); Veitch <i>et al.</i> (2012)
2. PM and Information Technologies	Adler (2007); Bandara <i>et al.</i> (2017); Barlow <i>et al.</i> (2006); Brauer (2008); Carr and Dimitrakakis (2003); Fickenscher and Bakerman (2011); Fraser (2003); Frohlich <i>et al.</i> (2007); Gogan <i>et al.</i> (2016); Guah (2008); Helfert (2009); Hougham (1996); Hutton and West (2001); Kjaer and Madsen (1997); Kropf and Scalzi (2008); Lee (2010); Lee and Hirshfield (2006); Lin and Umoh (2002); Liu and Lin (2016); Miller and Miller (2007); Paavola (2007); Riva and Gramatica (2003); Spaulding <i>et al.</i> (2014); Sweeting (2002); Thielst (2007); Trudel <i>et al.</i> (2012); Weitzel and Andrews (1988); Yendt <i>et al.</i> (2008)
3. PM and Health Administration	Allgar <i>et al.</i> (2001); Aubry <i>et al.</i> (2014); Buelow <i>et al.</i> (2010); Côté and Daugherty (2000); De Vries (2011); Dey <i>et al.</i> (2006); Geelen-Baass and Johnstone (2008); Gulliver <i>et al.</i> (2013); Hayes (2000); Harrison <i>et al.</i> (2016); Peters <i>et al.</i> (2013); Priest <i>et al.</i> (2016); Robinson and Lefort (2000); Ruscitti <i>et al.</i> (2000); Thor <i>et al.</i> (2004); Whitehead (2005)
4. PM as a Management Lever in the Health Sector	Chiocchio <i>et al.</i> (2015); Datsenko and Schenk (2013); Geyer and Altman (2016); Gray (2005); Hartmann (2013); Hernandez <i>et al.</i> (2011); Ibrahim (2009); Pinto and Pinto (1990); Ryan (1979); Stanley and Malone (2016); Vega-Gonzalez <i>et al.</i> (2012); Yeow and Edler (2012)
5. PM and Construction	Barlow and Koberle-Gaiser (2008); Bowerman (2006); Campobasso and Hosking (2004); Cardno (2008); Chandra et Loosemore (2011); Elf <i>et al.</i> (2012); Hegland and Kruger (2008); Hosking (2005); Hudson <i>et al.</i> (2015); Pauget and Wald (2013); Singhania and Sharma (2014)

and Health Administration, and PM and Construction has remained relatively stable (see Figure 2).

### *PM and Health Administration*

The significance given to the notion of health administration varies from one author to another. For the purpose of the present article, we are inspired by the School of Public Health, Indiana University-Purdue University, Indianapolis (IUPUI). Thus, we have grouped together under the topic of

Health Administration (or Healthcare Administration) all the publications linked “to leadership, management, and administration of hospitals, hospital networks, health care systems, and public health systems” (IUPUI).

After information technologies, Health Administration is the second most important topic (20 %: 16/81 - see Figure 1 - For the list of literatures examined see Table 1). This result is not unrelated to the fact that the tools and techniques used in project management (GANTT, Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT) and other project

charters) have proven their worth in many enterprises and in the health care system. Among the collection of project charters available, the Tryon and Associates Project Charter is most particularly used by hospital departments and laboratories in the United States. charters) have proven their worth in many enterprises and in the health care system. Among the collection of project charters available, the Tryon and Associates Project Charter is most particularly used by hospital departments and laboratories in the United States. Hayes (2000)<sup>2</sup> demonstrates how one must carry out the management of a project in hospital departments that use a project charter in order to draw maximum benefit from it and to increase the chances of its success: “This output begins to organize and document a project’s need and expected outcomes at the beginning of the project management process, and provides a foundation on which to base project decisions” (Hayes, 2000, p.22).

For their part, Buelow, Zuckweiller and Rosacker (2010) underline the far-reaching effects of project management tools. According to the authors, these tools allow for reductions in hospital operation costs while still attaining high standards of quality. For example, the acquisition of ISO 9000 (International Standard Organisation) quality certifications is an objective of one of the biggest pediatric hospitals in Italy: the Bambino Gesù. Ruscitti *et al.* (2000) report that projects from all the departments at Bambino Gesù (medical professionals, management techniques) are scrupulously examined in the light of project management practices and principles to ensure the quality of the service offered by medical staff to patients, in conformity with ISO 9000 certification. Still on the theme of quality, Priest *et al* (2016) took an interest in prehealth volunteers as a solution to the expanding continuous quality improvement capacity in a medical intensive care unit.

Still on the subject of project management techniques and hospital management, Côté and Daugherty (2000) describe how a small rural hospital benefitted from efficient use of project management tools. These tools helped administrators, controllers and account clerks

to understand, to control and to improve hospital procedures regarding end-of-the-month reports. These reports are then used to better manage financial and operational resources of the hospital. In the course of their case studies, the authors have noted the observation, or indeed the evident fact, that project management can greatly improve a process while at the same time benefitting communications between all of the stakeholders.

Besides, and similarly to what the table sets out on the topic of PM and Clinical Care, Public Health Care and Social Services, stakeholders are to be found at the heart of research work dealing with the management of Health Administration projects. For example, De Vries (2011) analyses stakeholders during projects for restructuring or re-engineering of health services inventory systems. The success of projects of this size depends upon the dynamism of the relations and interactions between the different stakeholders. Consequently, adequate management of projects dealing with an inventory system in the health care system requires a complete integration of stakeholder interests in concordance with the objectives of the said projects (De Vries, 2011).

To this first example we add a second. Gulliver *et al.* (2013) focus upon and develop a framework for the management of client relations (the client being quite obviously a very important stakeholder in the health care system) associated with the practice of project management in order to facilitate the creation of values and characteristics in residential and long-term care centres. The authors clearly demonstrate that a set of values is not always applicable in all situations. This is why they propose a different framework (including 17 characteristics) which can be adjustable according to the situations and requirements for residential centres in the area of client relations management. This being said, the framework can be used in the planning stage of client relations management to evaluate which characteristics can render and deliver more values.

### ***Project Management as a Management Lever in the Health Sector***

A certain number of articles are difficult to classify under one or the other of the four preceding topics because they do not specifically deal with care, health services or social services, or else, even though they may deal with a hospital centre,

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<sup>2</sup>. Although the subject covered is information systems, Hayes (2000) puts the emphasis on the project charter as a tool for hospital management that performs only on the management of the information systems themselves. This is why we have classified the works of Hayes (2000) under the topic of Health Administration.



because they do not really dwell upon one aspect or another of hospital management. For this reason, in this fifth category we have collected, on the one hand, those articles which focus upon project management as a management procedure that should generally be given special weight in the health sector (see Chiochio *et al.*, 2015, Yeow and Edler, 2012, Hernandez, Aderton and Eidem, 2011) and on the other hand we have collected those works that consider the project management approach the cornerstone of success for projects in the health sector (e.g. : Datsenko and Schenk, 2013, Pinto and Pinto, 1990).

The collaboration of health sector professionals, or in other words the integration of practices, is a challenge that has been underlined for many years (see Shortell, 2000). Chiochio (2015) focuses on this challenge by illustrating, among other things, that training workshops integrating project management and collaboration improved self-efficacy for project-specific task work and teamwork; increased goal clarity and coordination; and have significant impact on the functional performance of Healthcare projects. Yeow and Edler (2012), for their part, dwell upon the complex character of contractual processes in health care systems, and call for a “projectification”; in other words, transforming the entire process along the lines of a project. Upon this is based the relevance of contract management by borrowing from the project management principles.

Hernandez, Aderton and Eidem (2011), for their part, describe the major contributions that a manager brings to large projects undertaken in the health environment. The benefits of having a project manager, preferably accredited by the *Project Management Institute* (PMI) is not a negligible asset in guaranteeing the success of service, care and health projects. According to the authors, the project manager plays an essential role in the management or restructuring of a department, or of a medical clinic, since his expertise allows him to exercise appropriate (and tight) control over deadlines, costs and quality in keeping with established goals. In addition to possessing recognized knowledge in project management, the project manager must be recruited from outside the organization and the success of projects should be his only mandate: “As physician leaders are asked to lead large projects in health care, they discover how valuable project managers can be in organizing and bringing complex projects to successful completion on time and on budget” (Hernandez *et al.*, 2011, p.62).

In the same line of thinking, Datsenko and Schenk (2013) demonstrate that interpersonal and relational abilities and characteristics (soft skills) are very important in project managers. The authors conclude that effective communication remains an essential ability to bring a project and project team to success. From their works based on contact with European and American project leaders, they have drawn the following conclusions: a good project leader in the realm of health care must necessarily possess a strong ability for effective communications. He must define clear and precise goals that will serve to guide initiatives. Finally, a good project leader must adopt a proactive work style.

Finally, Pinto and Pinto (1990) study communications as an essential factor for new project success. Although health services and health care are only instrumentally related to their research work, Pinto and Pinto (1990) underscore that communication is an integral part of the success of any new project in the health sector. Their research evaluates the relationship between two aspects of communications (formal and informal, as well as the reason for a communication) and the level of interfunctional cooperation achieved by a project team attached to health care and services programs in a hospital centre. The results of their research are not surprising, since teams with a high level of cooperation more efficiently succeed in their projects, compared to teams whose cooperation is weak in terms of making increased use of formal and informal communications methods. In other words, interfunctional cooperation is a success indicator for projects in general and particularly in the health sector (Chiochio, 2015, Vega-González *et al.*, 2012; Pinto and Pinto, 1990, Gauthier and St-Pierre, 2012).

About 10 articles (14%) were classified under the theme of project management as a management lever in the health sector (see Figure 1). The complete list of articles examined that deal with this fourth topic is set out in Table 1.

### *PM and Construction*

The study of relations between different stakeholders is also found under the topic of management of construction projects in the health sector (the last most important topic – 11/81: 14% - see Figure 1.)

For example, Pauget and Wald (2013) took an interest in the complex case of a construction project for a new hospital in France. Given the size of the construction project, it rapidly became an organization in its own right with a temporary existence (since it is to disappear once the project is completed) and in which a good number of individuals employed by different organizations participate (for example the engineers from Y, the architects from X etc.). In such a context, the project team formed itself into a network of individuals and organizations from diverse horizons (in other words heterogeneous partners) who interact together. Among other things, Pauget and Wald (2013) dwelt on the concept of relational competence as one of the key components of success for the new hospital construction project in France. Relational competence refers to the capacity of project managers to coordinate relations between heterogeneous partners in a project team who are formed into a network. According to the authors, coordinating such relations requires a combination of three types of relational competencies: namely, the coordinator, the gatekeeper and the mediator/translator.

Keeping in mind this idea of the link between effectiveness or success of projects and stakeholders, we examined the works of Chandra and Loosemore (2011) who focus on the importance of processes whereby cultural knowledge is exchanged between the stakeholders and the members of a new hospital construction project. Dwelling more particularly on the project briefing process, the authors underline that during exchanges of cultural knowledge, links of mutual confidence are built up between members of the project and stakeholders. Starting from there, members of the project and stakeholders succeed in arriving at a common understanding of the characteristics of the project. Consequently, for Chandra and Loosemore (2011), the key to success in a new hospital construction project resides in the mutual confidence that results from the sharing of cultural knowledge.

Authors have more broadly been interested in key principles or key factors for the success of construction projects in the health sector, at the same time going beyond the sole considerations of the stakeholders. This is for example the case with Hosking (2005) but also with Campobasso and Hosking (2004). Hosking (2005) presents seven key principles of success in hospital construction projects designed to replace older hospitals whose

infrastructures are aging or obsolete. Among these key principles, Hosking (2005) underlines the involvement and leadership of upper management as an asset that determines the success of such projects. To this Hosking (2005) adds: disposing of sufficient time for planning; breadth of vision; thinking of tomorrow's needs; always trying to improve operational objectives; adequate decision-making; and community involvement.

As for Campobasso and Hosking (2004), to give a last example, they focus on two factors for success in a hospital construction program. The first success factor depends on the selection of team members, which must be precise and appropriate, in other words, that nothing be left to chance. The roles and responsibilities of the project manager, of the project executive and of consultants must be clearly established at the very beginning of the project. The second success factor concerns the adoption of a well-defined management process. One of the key elements on which it is important to capitalize is the principle under which one must have an excellent comprehension of the process of project management before passing from the conception to the implementation stage. In Table 1, we list all the authors examined whose works are organized around construction projects in the health sector.

### **Project Management Publications as a Reservoir of Knowledge on Projects and their Management in the Health Sector.**

For a number of years, a growing number of journals have published state-of-the-art knowledge on projects and their management. *Project Management Journal* (PMJ), *International Journal of Project Management* (IJPM) and *International Journal of Managing Project in Business* (IJMPB) lead the list of the most important journals in project management. Since success in projects in the health sector involves mobilization of project management knowledge, (see the authors examined in Section “*Project Management as a Management Lever in the Health Sector*”), to what extent did the articles published in PMJ, IJPM and IJMPB serve as references to the articles that we examined?

When we break down the list of references of the 81 articles examined, and when we count up the references made to PMJ, IJPM and IJMPB, we arrive at the following results. All in all, there are references to 29 articles published in PMJ, and to 68 articles published in IJPM. This being said, the

majority (65%: 63/97) of references to articles published in PMJ or in IJPM are concentrated in four articles that were themselves published in PMJ (see Hayes, 2000, Chiochio, 2015 – in which we have counted 17 references) or in IJPM (see: Aubry *et al.*, 2014, Pauget and Wald, 2013 – in which we have counted 46 references).

In other words, three (3) facts may be inferred from the results we have just reported. First, the majority (93%: 75/81) of the examined articles on projects and their management in the health sector were published in journals other than the three leading project management journals. Obviously, project management in the health sector is a marginal subject in the general disciplinary field of project management: 1 articles were published on this topic in PMJ (Hayes, 2000) and 5 in IJPM (Liu and Lin, 2016, Aubry *et al.*, 2014, Pauget and Wald 2013, Gray, 2005, Hougham, 1996). No article has been published on “project management in the health sector” in IJMPB.

Second, of these 74 articles, only a small number mobilize published knowledge about project management. Indeed, only 15% (11/74) of these articles make reference to one or the other of the two leading project management journals (PMJ and IJPM). More specifically, these 11 articles make reference to only 11 articles published in PMJ and to 19 articles published in IJPM. No reference is made to an article published in IJMPB. In other words, state-of-the-art knowledge on project management does not constitute the first reservoir from which the majority of researchers will draw in analysing a project and its management in the health sector.

Third, we would be tempted to believe that articles dealing with information technology, construction, or indeed with project management as a management lever in the health sector, are more heavily based upon works published in PMJ, IJPM or IJMPB. This is not, however, the trend that we detect with our results. The 11 articles that refer to articles published in PMJ or in IJPM are spread out fairly evenly over the 5 topics: three articles dealing with *clinical care, public health services and social services* (namely: Bell and Christina, 2006, Lavoie-Tremblay *et al.*, 2012, Patterson *et al.*, 2017); two articles dealing with information technologies, (namely: Lee and Hirshfield, 2006, Spaulding *et al.*, 2014,); two articles dealing with *health administration* (namely: Buelow *et al.*, 2010, De Vries, 2011,); one article dealing with *construction* (namely: Chandra and Loosemore, 2011) ; and three articles dealing with *project management as a management lever in the health sector* (namely:

Datsenko and Schenk, 2013, Ibrahim *et al.*, 2009, Pinto and Pinto, 1990).

## Conclusion

We used ABI/INFORM to identify 81 articles under the subject headings “Health” and “Project Management”. These articles, which were published between 1979 and May 2017 (inclusively), were then classified under five categories: (i) Project Management (PM) and Clinical Care, Public Health Services and Social Services, (ii) PM and Information Technologies, (iii) PM and Health Administration, (iv) PM as a Management Lever in the Health Sector and (v) PM and Construction. Even though care, health services and social services are the primary mission of health systems, researchers’ attention has principally been drawn by the topic of PM and information technologies.

Quebec is the only member of the OECD to make projects a tactical lever for care, for health services and for social services. It was even suggested that one could rely on the knowledge developed by the discipline of project management to manage all phases of project. But if some parties (such as the Quebec Ministry of Health and Social Services – See MSSS, 2004) promote project management in the health care system, a tally of the reference lists of the 81 articles examined shows however that those works dealing with health projects are very seldom based on state-of-the-art knowledge published in one or the other of the leading project management journals (in particular the *Project Management Journal* and the *International Journal of Project Management*). This is perhaps not unrelated to the fact that from 1979 to May 2017, only six articles with the subject headings “Health” and “Project Management” were published in one or the other of the journals belonging to the project management discipline.

Obviously, our results are not exhaustive, and are limited to an analysis of only the content of ABI/INFORM. Nonetheless, the trend suggested by our results merits reflection. We repeat that care, health services and social services are the first challenges at the very heart of the health care system (Mintzberg, 2012). A good number of health professionals who must daily meet these challenges suggest taking the project path to do so. Thus, and in the eventual case in which project management wishes to become a discipline associated with health, PM must promote the initiation of research that defines what is truly at

stake in a project and its management, in relation to the primary mission of health care systems: care, health services and social services.

## References

- ABEL, M. H. & CUMMINGS, P. 1993. A demonstration program for homeless male alcohol and other drug abusers. *The journal of mental health administration*, 20, 113-125.
- ADLER, K. G. 2007. How to successfully navigate your EHR implementation. *Family Practice Management*, 14, 33-39.
- AFZAL, A. & GAUTHIER, J.-B. 2014. Clinical Project of the Ministry of Health and Social Services in Quebec - Current status 10 years after initiation. *Poster session presented at the meeting of CAHSPR*. Toronto, Canada.
- AGENBAG, M. H. A. & LUES, J. F. R. 2009. Resource management and environmental health service delivery regarding milk hygiene. *British Food Journal*, 111, 539-553.
- AHMAD, M., SHAHZAD, K. & AHMED, I. 2011. Change management: A case of national railway hospital in Pakistan. *The Journal of Commerce*, 3, 33-36.
- ALLGAR, V., LEESE, B., HEYWOOD, P. & WALKER, R. 2001. First wave PMS pilots: A critical analysis of documentation. *Journal of Management in Medicine*, 15, 299-311.
- ANDERSON, J. 2004. Project Management in Health and Community Services. *Australian Health Review*, 27, 103-104.
- AUBRY, M., RICHER, M.-C. & LAVOIE-TREMBLAY, M. 2014. Governance performance in complex environment: The case of a major transformation in a university hospital. *International Journal of Project Management*, 32, 1333-1345.
- AUBRY, M., RICHER, M.-C., LAVOIE-TREMBLAY, M. & CYR, M. 2011. Pluralism in PMO Performance: The case of PMO Dedicated to a Major Organisational Transformation. *Project Management Journal*, 42, 60-77.
- BANDARA, W., THENNAKON, D., SYED, R., MATHIESEN, P. & RANAWEERA, K.K.D.S. 2016. Improving the clinical-care pathway of an Ayurvedic hospital: a teaching case for developing process improvement capabilities. *Journal of Information Technology Teaching Cases*, 6, 111-120.
- BARLOW, J., BAYER, S. & CURRY, R. 2006. Implementing complex innovations in fluid multi-stakeholder environments: Experiences of 'telecare'. *Technovation*, 26, 396-406.
- BARLOW, J. & KOBERLE-GAISER, M. 2008. Delivering Innovation in Hospital Construction: Contracts and Collaboration in the UK's Private Finance Initiative Hospitals Program. *California Management Review*, 51, 1-18.
- BELL, S. & CHRISTINA, A. 2006. Applying systemic project management approaches for the UK National Health Service. *Systemic Practice and Action Research*, 19, 27-43.
- BOWERMAN, J. 2006. Designing the primary health care centre of the future: A community experience. *Leadership in Health Services*, 19, 16-23.
- BRAUER, J. 2008. Standards-Based Open Source Healthcare Interface Engine. *Technology Innovation Management Review - open source business*.
- BUELOW, J. R., ZUCKWEILLER, K. M. & ROSACKER, K. M. 2010. Evaluation Methods for Hospital Projects. *Hospital Topics*, 88, 10-17.
- CAMPOBASSO, F. D. & HOSKING, J. E. 2004. Two factors in project success: A clear process and a strong team. *Journal of Healthcare Management*, 49, 221-225.
- CARDNO, C. A. 2008. Sustainable Design: Lake Will Help Heat, Cool New Hospital. *Civil Engineering*, 78, 25-27.
- CARR, D. M. & DIMITRAKAKIS, J. 2003. Explore all-encompassing electronic health records. *Nursing Management*, 34, 24-25.
- CHANDRA, V. & LOOSEMORE, M. 2011. Communicating about organizational culture in the briefing process: case study of a hospital project. *Construction Management and Economics*, 29, 223-231.
- CHIOCCHIO, F., BEAULIEU, G., BOUDRIAS, J., ROUSSEAU, V., AUBÉ, C. & MORIN, E. M. 2010. The project involvement index, psychological distress, and psychological well-being: Comparing workers from projectized and non-projectized organizations. *International Journal of Project Management*, 28, 201-211.
- CHIOCCHIO, F., RABBAT, F. & LEBEL, P. 2015. Multi-Level Efficacy Evidence of a Combined Interprofessional Collaboration and Project Management Training Program for Healthcare Project Teams. *Project Management Journal*, 46, 20-34.
- CLAEYÉ, F. & JACKSON, T. 2011. Project delivery in HIV/AIDS and TB in southern Africa. *Journal of Health Organization and Management*, 25, 469-486.

- COTE, M. J. & DAUGHERTY, C. R. 2000. Using project management to improve month-end reporting in a hospital. *Production and Inventory Management Journal*, 41, 17-22.
- CRAWFORD, L., POLLACK, J. & ENGLAND, D. 2006. Uncovering the trends in project management: Journal emphases over the last 10 years. *International Journal of Project Management*, 24, 175-184.
- CRAWFORD, L. H. & HELM, J. 2009. Government and Governance: The value of Project Management in the Public Sector. *Project Management Journal*, 1, 73-87.
- DATSENKO, Y. & SCHENK, J. 2013. Leading clinical projects. Applied Clinical Trials. *Applied Clinical Trials*, 22, 24-28.
- DE VRIES, J. 2011. The shaping of inventory systems in health services: A stakeholder analysis. *International Journal of Production Economics*, 133, 60-69.
- DEY, P. K., HARIHARAN, S. & BROOKES, N. 2006. Managing healthcare quality using logical framework analysis. *Managing Service Quality*, 16, 203-222.
- ELF, M., ENGSTRÖM, M. S. & WIJK, H. 2012. An assessment of briefs used for designing healthcare environments: A survey in Sweden. *Construction Management and Economics*, 30, 835-844.
- FICKENSCHER, K. & BAKERMAN, M. 2011. Leadership and governance for IT projects. *Physician Executive*, 37, 72-76.
- FRASER, S. W. 2003. Project storyboards: catalysts for collaborative improvement. *International Journal of Health Care Quality Assurance*, 16, 300-305.
- FROHLICH, J., KARP, S., SMITH, M. D. & SUJANSKY, W. 2007. Retrospective: Lessons learned from the Santa Barbara project and their implications for health information exchange. *Health Affairs*, 26, w589-w591.
- GAUTHIER, J.-B. & IKA, L. 2012. Foundations of Project Management Research: An Explicit and Six-Facet Ontological Framework. *Project Management Journal*, 43, 5-23.
- GAUTHIER, J.-B. & ST-PIERRE, M. 2012. Les conditions de succès des projets dans le secteur de la santé: l'intégration des équipes de projet. *Journal of Global Business Administration*, 4, 18-30.
- GEELLEN-BAASS, B. & JOHNSTONE, J. M. K. 2008. Building resiliency: Ensuring business continuity is on the health care agenda. *Australian Health Review*, 32, 161-173.
- GEYER, K., ALTMAN, M. (2016). It's all about that base, part 2: Going live. *Nursing Management*, 47, 38-42.
- GOGAN, J. L., DAVIDSON, E. J., PROUDFOOT, J. 2016. The HealthCare.gov project. *Journal of Information Technology Teaching Cases*, 6, 99-110.
- GRAY, E. 2005. Utilizing the ethics of Project Management in the HealthCare Field. *Project Management Journal*, 36, 61-65.
- GUAH, M. W. 2008. IT project escalation: A case analysis within the UK NHS. *International Journal of Information Management*, 28, 536-540.
- GUINAN, E., BOUDREAU, K. J. & LAKHANI, K. R. 2013. Experiments in Open Innovation at Harvard Medical School. *MIT Sloan Management Review*, 54, 44-52.
- GULLIVER, S. R., UDAY, B., JOSHI, U. B. & MICHELL, V. 2013. Adapted customer relationship management implementation framework: facilitating value creation in nursing homes. *Total Quality Management*, 24, 991-1003.
- HARRIS, S. B., GERSTEIN, H. C., YALE, J.-F., BERARD, L., STEWART, J., WEBSTER-BOGAERT, S. & TOMPKINS, J. W. 2013. Can community retail pharmacist and diabetes expert support facilitate insulin initiation by family physicians? Results of the AIM@GP randomized controlled trial. *BMC Health Services Research*, 13, 1-8.
- HARRISON, M.I., PAEZ, K., CARMAN, K. L., STEPHENS, J., SMEEDING, L., DEVERS, K. J., GARFINKEL, S. 2016. Effects of organizational context on Lean implementation in five hospital systems. *Health Care Management Review*, 41, 127-144.
- HARTMANN, S. 2013. Project scheduling with resource capacities and requests varying with time: A case study. *Flexible Services and Manufacturing Journal*, 25, 74-93.
- HAYES, D. S. 2000. 1999 international student paper award winner: Evaluation and application of a project charter template to improve the project planning process. *Project Management Journal*, 31, 14-23.
- HEGLAND, L. T. & KRUGER, M. 2008. From the Ground Up: Building an All-Digital Hospital. *Physician Executive*, 15, 937-952.
- HELFERT, M. 2009. Challenges of business processes management in healthcare. *Business Process Management Journal*, 15, 937-952.
- HERNANDEZ, J. S., ADERTON, J. & EIDEM, L. 2011. The role of project managers who assist

- physician leaders at mayo clinic. *Physician Executive*, 37, 62-65.
- HOSKING, J. E. 2005. Lessons learned: Seven keys to a successful replacement hospital project. *Journal of Healthcare Management*, 50, 8-11.
- HOUGHAM, M. 1996. London Ambulance Service computer-aided despatch system. *International Journal of Project Management*, 14, 103-110.
- HUDSON, M., SHAO, L., MURPHY, M. & LEW, M. 2015. The Right Mix. *Civil Engineering*, 85, 68-73, 81.
- HUTTON, A. & WEST, L. 2001. Scalability and sustainability: research experiment to operational service. *Library Management*, 22, 39-42.
- IBRAHIM, A. D., PRICE, A. D. F. & DAINTY, A. R. J. 2009. Evaluation of key practices under the local improvement finance trust (LIFT) initiative for UK healthcare facilities. *Engineering, Construction and Architectural Management*, 16, 504-518.
- IKA, L. A. 2009. Project Success as a Topic in Project Management Journals. *Project Management Journal*, 40, 6-19.
- IUPUI. 2016. *What Is Health Administration?* [Online]. Available: <http://www.pbhealth.iupui.edu/index.php/explore-population-health/what-is-health-administration/> [Accessed January 20 2016].
- JAAFARI, A. 2007. Project and program diagnostics: A systemic approach. *International Journal of Project Management*, 25, 781-790.
- JACOBSEN, J. 2008. Teamwork Makes the Difference. *The Journal for Quality and Participation*, 31, 30-38.
- JUNIOR WATER PRIZE GENERATES 2 AWARD-WINNING PROJECTS. 2011. *Journal - American Water Works Association*, 103, 132-132, 134.
- KIWANUKA, S. N., TETUI, M., GEORGE, A., KISAKYE, A. N., WALUGEMBE, D. R. & KIRACHO, E. E. 2015. What Lessons for Sustainability of Maternal Health Interventions Can Be Drawn from Rural Water And Sanitation Projects? Perspectives from Eastern Uganda. *Journal of Management and Sustainability*, 5, 97-107.
- KJAER, A. & MADSEN, K. H. 1997. Customer-vendor co-operation. *Information Technology & People*, 10, 205-223.
- KROPF, R. & SCALZI, G. 2008. Great project management = IT success. *Physician Executive*, 34, 38-40.
- LAMICHHANE, D. K. & MANGYO, E. 2011. Water accessibility and child health: Use of the leave-out strategy of instruments. *Journal of Health Economics*, 30, 1000-1010.
- LARRISON, R. G. 2003. Development of an inpatient rehab facility in an urban safety-net hospital. *Journal of Healthcare Management*, 48, 202-209.
- LAVOIE-TREMBLAY, M., BONNEVILLE-ROUSSY, A., RICHER, M.-C., AUBRY, M., VEZINA, M. & DEME, M. 2012. Project management office in health care: a key strategy to support evidence-based practice change. *The Health Care Manager*, 31, 154-165.
- LEE, E. 2010. Advancing health care on multiple fronts. *OR/MS Today*, 37, 20-31.
- LEE, P. D. & HIRSHFIELD, M. 2006. Project Planning for Health Care Software Implementations. *The Health Care Manager*, 25, 310-314.
- LIN, B. & UMOH, D. 2002. E-healthcare: A vehicle of change. *American Business Review*, 20, 27-32.
- LIU, S. & DENG, Z. 2015. Understanding Knowledge management capability in business outsourcing: a cluster analysis. *Management Decision*, 53, 124-138.
- LIU, S. & LIN, W. 2016. Influence of managerial control on performance in medical information system projects: The moderating role of organizational environment and team risks. *International Journal of Project Management*, 34, 102-116.
- MACLEAN, S., BERENDS, L., HUNTER, B., ROBERTS, B. & MUGAVIN, J. 2012. Factors that enable and hinder the implementation of projects in the alcohol and other drug field. *Australian and New Zealand Journal of Public Health*, 36, 61-68.
- MILLER, R. H. & MILLER, B. S. 2007. The Santa Barbara County care data exchange: What happened? *Health Affairs*, 26, w568-w580.
- MSSS 2004. *Projet clinique - Cadre de référence pour les réseaux locaux de services de santé et de services sociaux - Document principal*,

- Québec, Gouvernement du Québec.
- MINTZBERG, H. 2012. Managing the myths of health care. *World Hospitals and Health Services*, 48, 4-7.
- MOK, K. L., HAN, S. H. & CHOI, S. 2014. The implementation of clean development mechanism (CDM) in the construction and built environment industry. *Energy Policy*, 65, 512-523.
- MÜLLER, R. & JUGDEV, K. 2012. Critical success factors in projects: Pinto, Slevin, and Prescott- the elucidation of project success. *International Journal of Managing Projects in Business*, 5, 757-775.
- OECD. 2016. *Health spending (indicator)* [Online]. [Accessed 13 January 2016].
- PAAVOLA, T. 2007. Justifying IT system investments. *International Journal of Healthcare Technology & Management*, 8, 97-106.
- PATTERSON, T. R., DINKIN, D.R. & CHAMPION, H. 2017. Team sponsors in community-based health leadership programs. *Leadership in Health Services*, 30, 171-183.
- PAUGET, B. & WALD, A. 2013. Relational competence in complex temporary organizations: The case of a French hospital construction project network. *International Journal of Project Management*, 31, 200-211.
- PETERS, D. H., PAINA, L. & SCHLEIMANN, F. 2013. Sector-wide approaches (SWAps) in health: what have we learned? *Health Policy and Planning*, 28, 884-890.
- PINTO, M. B. & PINTO, J. K. 1990. Project team communication and cross-functional cooperation in new program development. *The Journal of Product Innovation Management*, 7, 200-212.
- PRIEST, K. C, LOBINGIER, H., MCCULLY, N., LOMBARD, J., HANSEN, M., UCHIYAMA, M., HAGG, D. S. 2016. Expanding Continuous Quality Improvement Capacity in the Medical Intensive Care Unit: Prehealth Volunteers as a Solution. *Quality Management in Health Care*, 25, 79-84.
- PROJECT MANAGEMENT INSTITUTE (PMI). 2013. *A Guide to the Project Management Body of Knowledge (PMBok Guide)*. Newtown Square, Pennsylvania, PMI.
- RAISINGHANI, M. S. 2014. An interview with Jonathan Overton, Director, Program Management Office, Cook Children's Health Care System, Fort Worth, Texas. *Journal of Information Technology Case and Application Research*, 16, 168-171.
- RAMANI, K. V. & MAVALANKAR, D. 2009. Management capacity assessment for national health programs. *Journal of Health Organization and Management*, 23, 133-142.
- RIDLEY, D. 2012. *The Literature Review. A Step-by-Step Guide for Students*, Thousand Oaks, Sage Publications.
- RIVA, G. & GRAMATICA, F. 2003. From stethoscope to ambient intelligence: The evolution of healthcare. *International Journal of Healthcare Technology & Management*, 5, 268-283.
- ROBINSON, J. & LEFORT, W. 2000. Costing clinical audit: preparing for clinical governance. *International Journal of Health Care Quality Assurance*, 13, 111-117.
- RUSCITTI, G., PALCHETTI, G., CICCARONE, L. & BERNASCHI, P. 2000. The ISO 9000 quality assurance projects of paediatric hospital bambino gesu. *Total Quality Management & Business Excellence*, 11, 393-398.
- RYAN, J. E. 1979. Hospital project manager. *Journal of Systems Management*, 30, 38-41.
- SANDERS, J. 2002. Development and implementation of an endovascular surgery program in a community general hospital. *Journal of Healthcare Management*, 47, 335-340.
- SHIRLEY, D. 2011. *Project Management for Healthcare*, Boca Raton, FL, CRC Press.
- SHORTELL, S. M., GILLIES, R. R., ANDERSON, D. A., MORGAN ERICKSON, K. & MITCHELL, J. B. 2000. *Remaking Health Care in America. The Evolution of Organized Delivery System*, San Francisco, Jossey-Bass Publishers.
- SINGHANIA, M. & SHARMA, M. 2014. North DMC medical college: Innovative project management and new paradigm of development. *Decision*, 41, 117-134.
- SPAULDING, A., GAMM, L., KIM, J. & MENSER, T. 2014. Multiproject interdependencies in health systems management: A longitudinal qualitative study. *Health Care Management Review*, 39, 31-40.
- STANLEY, D., MALONE, L., SHIELDS, L. (2016). Project management supports the change process. *Nursing Management*, 47, 52-55.
- SWEETING, P. 2002. Designing robotic systems for the healthcare industry. *The Industrial Robot*, 29, 15-19.
- TAREEN, E. U. & OMAR, M. A. 1997. Community entry - an essential component of

- participation. *Health Manpower Management*, 23, 97-99.
- THIELST, C. 2007. Effective Management of Technology Implementation. *Journal of Healthcare Management*, 52, 216-219.
- THOR, J., HERRLIN, B., WITTLÖV, K., SKÅR, J., BROMMELS, M. & SVENSSON, O. 2004. Getting Going Together: Can Clinical Teams and Managers Collaborate to Identify Problems and Initiate Improvement? *Quality Management in Health Care*, 13, 130-142.
- TRUDEL, M., PARÉ, G. & LAFLAMME, J. 2012. Health information technology success and the art of being mindful: Preliminary insights from a comparative case study analysis. *Health Care Management Review*, 37, 31-42.
- VEGA-GONZÁLEZ, L. R., HERNÁNDEZ, A. J. & SÁNCHEZ, E. P. 2012. The management of medical innovations using propriety technology: A Mexican case study. *International Journal of Management Reviews*, 29, 454-463.
- VEITCH, C., LINCOLN, M., BUNDY, A., GALLEGO, G., DEW, A., BULKELEY, K., BRETNALL, J. & GRIFFITHS, S. 2012. Integrating evidence into policy and sustainable disability services delivery in western New South Wales, Australia: the 'wobbly hub and double spokes' project. *BMC Health Services Research*, 12, 70.
- WEITZEL, J. R. & ANDREWS, K. R. 1988. A Company/University Joint Venue to Build a Knowledge-Base System. *MIS Quarterly*, 12, 23-24.
- WHITEHEAD, D. 2005. Project management and action research: Two sides of the same coin? *Journal of Health Organization and Management*, 19, 519-531.
- YENDT, M., BENDER, D. & MINAJI, B. 2008. Open Source Reference Implementation. *The Open Source Business Resource*, 11-16.
- YEOW, J. & EDLER, J. 2012. Innovation procurement as projects. *Journal of Public Procurement*, 12, 472-504.