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What are the Barriers and Facilitators to the Implementation and/or Success of Quality Improvement and Risk Management in Hospitals: A Systematic Literature Review

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Abstract

Background:Most of the research papers and literature reviews on barriers and facilitators of quality and safety improvement programs and actions in hospitals failed to have a comprehensive approach, in particular regarding the individual factors, which in a daily practice appear to be key. The objective is to list comprehensively these factors and to organize them in relevant categories.

Methods: This systematic literature review examines, organizes and summarizes current literature on the association between hospital-level, department-level and individual-level and implementation and/or success of horizontal quality improvement and risk management programs and actions in hospitals. The search covered the medical, social and human sciences literature based on all ranges of approaches, quantitative, qualitative and mixed. Inclusion criteria were publication period between 1990 and 2012 in English and French, association between one or several factors and a quality/safety improvement action/program implementation and/or success, use of a structured quantitative and/or qualitative methodology. Critical appraisal was made by two independent readers using a structured grid. A multidisciplinary team (sociologists, researchers in management and in quality and safety, hospital director and chief medical officer) classified the factors into categories.

Results: Among 30,593 references, 23 articles were analyzed in depth, six literature reviews and17 original articles; 11 of which used a qualitative methodology, four a mixed methodology and two a quantitative methodology. None of these original articles was included in the bibliographies of the 6 literature reviews. In all, 73 facilitating factors and 58 factors barriers were retrieved.

Factors associated with management and leadership, and organizational factors (related to the organization of work in general and not with the organization of the project itself), seemed to hold an important role. The quality management system followed the same trend, with more facilitating factors than barriers. Conversely, the interactional and individual factors were more often barriers. The most frequent factors referring to the individual level were "trivialization" (low perceived importance of risk), denial of reality, of the patient's feelings, and lack of skills or knowledge.

Conclusion: While implementing quality/safety actions, it is probably just as important to take the barriers into account as facilitators; however, they are possibly more difficult to identify than the facilitators as they are apparently more often psychosocial in nature or relate to interactions between professionals.

Keywords: Quality improvement; Risk management; Hospitals; Facilitators; Barriers

Abbreviations: MUSIQ: Model for Understanding Success in Quality; DUQUE: Deepening our Understanding of Quality Improvement in Europe.

Background

Quality improvement and risk management actions and programs in hospitals are today seen as a priority and a key public health issue, aiming to improve not only patient care, but also working conditions for health professionals. In most hospitals of most developed and more recently emergent/developing countries, such programs become mandatory under sometimes external pressure (law, regulations, accreditation and certification). While a number of actions and programs have been put in place to date, outcomes have rarely been satisfactory [1,2] with most having proved difficult to implement, often due to inadequate methodologies or implementation processes that were not adapted to contextual realities (of the hospital and /or department concerned) or to individual realities (of targeted subjects). Quality/safety management in hospitals is indeed not an intervention with proven effectiveness. We need evidence to convince healthcare professionals, customers, managers and regulators that these

programs are effective and efficient and implementation science is here to create generalizable knowledge that can be applied across settings and contexts, beyond the local specificities.

Research projects at local, national or international level (for example the quantitative DUQUE and the qualitative QUESAR projects funded by the European Union FP7 program) are in place in order to provide evidence-based data. In the context of a French Ministry of health funded research program, we developed a project into factors that determine progress and outcome in hospitals' risk management actions in France, with a particular focus on individual factors. As the literature failed to provide a list of this type of factors, we performed a literature review covering all types of factors.

Implementation theories, research papers and literature reviews have been published to provide researchers, quality improvement leaders, quality and risk managers, with information on barriers and facilitators of quality and safety improvement programs in hospital settings. Most of them were incomplete and failed in particular to properly take into account these individual factors, which in a daily practice appear to be key. In addition, the results of the literature reviews differ, depending on the inclusion criteria and on the methodological approaches. Among the existing literature reviews, the ones based on the MUSIQ model took account only of studies based on quantitative methods [3,4]. Two literature reviews studied quality improvement at hospital level [4,5], while the other recent reviews were limited to identifying factors associated with specific programs or action such as reducing the occurrence of adverse events, or implementing a quality management system [6-9]. Our goal was to complete these reviews of systematic reviews, especially by including the main human and social science databases, in order to properly integrate the qualitative research results.

We searched a vast, multidisciplinary literature to list comprehensively the factors (barrier or a facilitator) associated with the implementation and/or the success of horizontal quality improvement and risk management programs and actions in hospitals. The search covered the medical, social and human sciences literature based on all ranges of approaches, quantitative, qualitative and mixed.

Methods

Definition

We defined factor as anything that has a positive or negative influence on the design, progress (implementation), finalization and sustainability of a risk management action. We defined program as a quality or risk management plan, which specified the approach used (objectives, methods, purpose), and the management components and resources required. A risk management action is any type of practice, process or measure that might modify risk. A factor is said to be a facilitator or a barrier when there is a proven association between this factor and the implementation or success of this action. This association can be studied using qualitative and/or quantitative multifactor exploration.

Data source and data collection

English-language and French-language articles, published between 1990 and January 2012, were selected from the following databases: CINAHL, Francis, PsycARTICLE, Psychological and Behavioral sciences collection, PsycINFO, PubMed / Medline, Scopus, Soc Index, BDSP, Pascal, Social Sciences Citation Index. We devised a search strategy using the following keywords (example of the Medline electronic search strategy): Quality Improvement; Quality Improvement and Healthcare; Quality Improvement and Safety; Quality Improvement, Risk Management and Healthcare; Risk Management Actions and hospitals. The reference list of articles selected to be read in full were also examined.

Eligibility criteria

Article selection was in two stages, first by title, then by abstract. A reference was eligible if the title identified either a specific action or a quality improvement and risk management program/action, or if it contained one of the following terms: barrier, obstacle, factor and facilitator.

After this first selection by title, the articles were included if the abstract satisfied all the following inclusion criteria:

- Article published between 1990 and January 2012, in English and French. We chose this time period because the importance of research into quality improvement is a recent issue, and we assumed that the results of earlier studies would be referenced in articles published within this period.
- Association between one or several factors and a quality/safety improvement action/program implementation and/or success in a hospital context.
- Article based on a structured quantitative and/or qualitative methodology, Commentaries, editorials, letters, article revisions, magazine articles, books, reports, theses and articles with no original data were excluded.

First, we looked at literature reviews. Original articles not included in the literature reviews were systematically analyzed. In case of any doubt, we read the article in full and consequently had a second stage of exclusion according to the same criteria (figure 1).

Data extraction

Three authors from two different disciplines (two sociologists (TR; ZP) and a psychosociologist (LN)) examined the article titles and abstracts. In case of doubt, a public health physician with experience in care quality and safety (PM) was called in.

Data were extracted from all publications using a structured template: authors, publication date, country, context, aims of the study, risk management and/or quality improvement action and/or program, factors highlighted (barrier and/or facilitator), other results, limitations and relevant bibliographical references. Studies were grouped according to type of approach (qualitative, quantitative, mixed, conceptual framework and literature review).

Categorizing the extracted factors

In an approach similar to that adopted in Kaplan's literature review [4], a group of experts from different disciplines (hospital quality director, chief medical officer, quality and safety experts, researcher in management, psychologist, sociologists) worked on categorizing and summarizing factors taken from the literature, according to their common characteristics. The factors were classified according to the general categories in the DUQUE (Deepening our Understanding of Quality Improvement in Europe) analytical framework [10]. The aim of this European research project was to study the relationship of organizational quality improvement systems/management and culture, professional involvement, and patient empowerment with the quality of hospital care, including clinical effectiveness, patient safety and patient involvement. It was founded on a conceptual framework consisting of dimensions above and beyond the hospital (external pressure), and three categories of contextual variables at Hospital level, Care pathway level and Patient level.

We used the *NVIVO*® qualitative analysis software which enables to code information from the completed templates about factors that were barriers to the implementation of risk management actions and those that were facilitators. The advantage of using this software is the possibility of adding, modifying or deleting categories according to the progress being made: each category ("node") is like a drawer in which verbatim

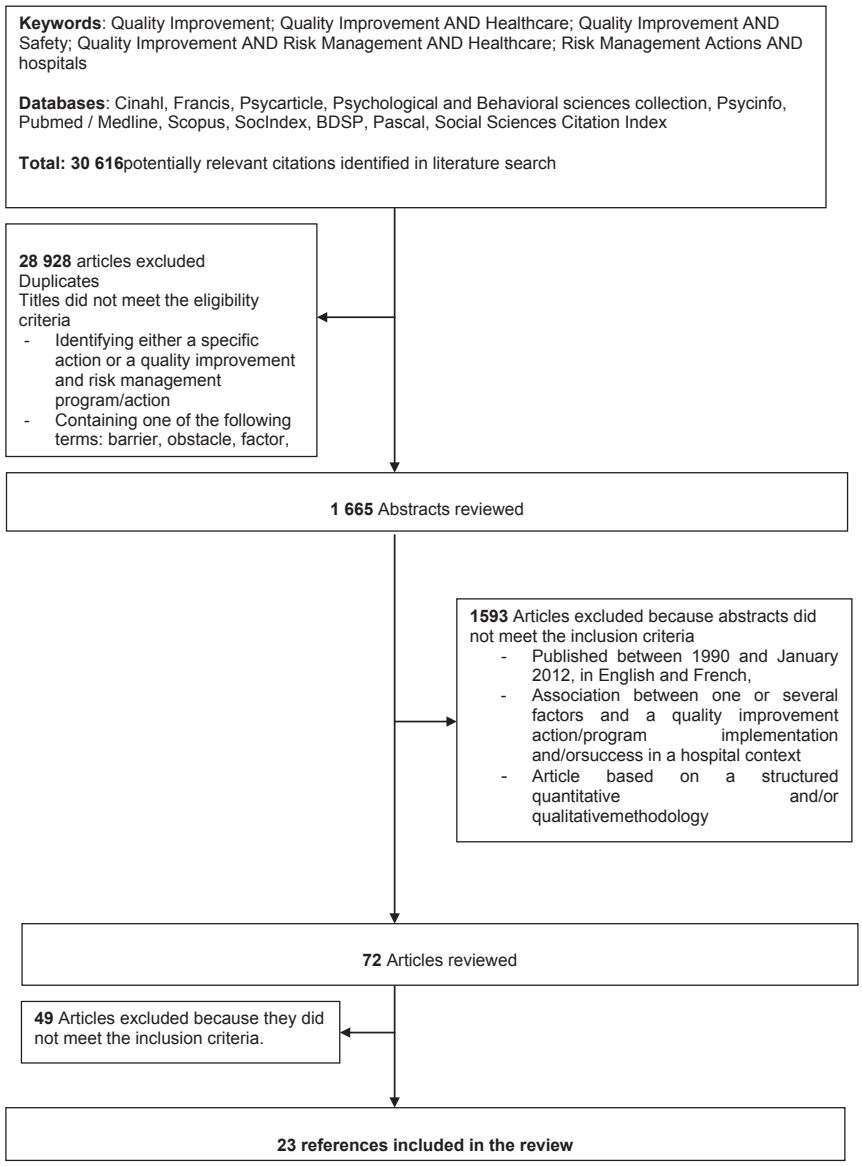

Figure 1: Literature search and study selection

extracts from the literature can be placed, associated with each factor. The *NVIVO*® software made it easier to categorize factors by grouping them together, while still retaining all the information attached to each one. Next, number of factors and number of occurrences of factors, i.e. the number of articles quoting a specific factor, were displayed (figure 2). Each article was considered in the same way in the count, including the literature reviews.

Results

Results of research and overview

The initial document search identified 30,593 references (figure 1). Of these, 1,687 were selected after verifying the relevance of the title. After the abstracts were compared with the previously defined inclusion criteria, 1,593 references were excluded; 23 duplicates were also excluded, which left 72 references remaining. All these articles were read in their entirety to be sure that they qualified and that they were relevant, after which 49 further references were excluded. In the end, 23 articles were analyzed in depth and detailed templates were produced.

Of the 23 articles selected, 6 were literature reviews [3-8,11], the last one being completed by producing a conceptual model, MUSIQ; 17 were original articles, 11 of which used a qualitative methodology [12-22], 4 used a mixed methodology [23-26], and the last 2, a quantitative methodology [27,28]. None of these original articles was included in the bibliographies of the 6 literature reviews we examined.

In all, we listed 73 facilitating factors and 58 factors that were barriers, in all the articles (figure 2).

Categories of factors

These factors were then grouped according to the specific level they belonged to and listed within five major categories representing these different levels:

- External to the establishment (factors related to support via external structures, regulations, certification or accreditation, external supervisory measures such as quality/safety indicators, type of health personnel payment, type of health care financing),

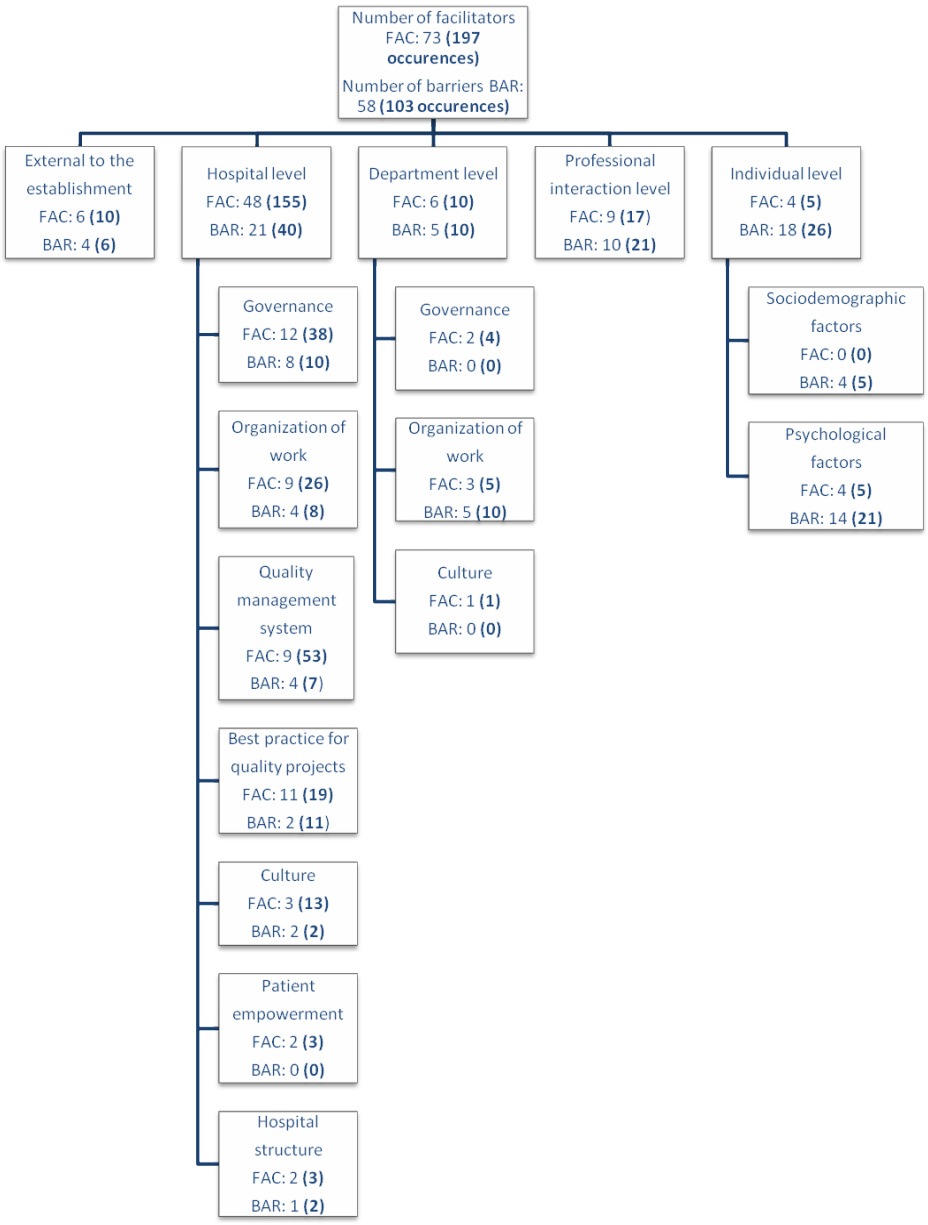

Figure 2: Number of factors (facilitators and barriers to quality/safety improvement actions and programs) and number of occurrences in the 23 reviewed articles according to hospital-level categories.

The number of occurrence of facilitators (FAC) and of barriers (BAR) was the number of articles quoting a specific factor (numbers in bold). Each article was considered in the same way in the count, including the literature reviews. This representation intends to provide some trends, not a hierarchy of factors retrieved in the literature.

- At hospital level (governance, organization of work, quality management system, best practice for quality projects, culture, patient empowerment and hospital structure).
- At department level (governance, organization of work, culture).
- At professional interaction level.
- At individual level (socio-demographic and psychological factors, including factors linked with the subject himself and factors linked with his perception of the context).

The "professional interaction" category overlaps with "professionalism" in the DUQUE model [10], which was based both on attitudes (collegiality and collaboration, teamwork, updating professional skills, autonomy, common aims) and professional behavior (professional engagement, support for the project, etc.). The category covering individual factors, on the other hand, emerged from the literature review. This dimension was absent from the original DUQUE model [10].

Facilitating factors

The facilitating factors most frequently identified were at hospital level (figure 2): we found 155 occurrences (number of times this factor is cited in the literature) at this level of categorization compared with 17 at professional interaction level, 10 at department level, 10 occurrences for factors external to the hospital and 5 at individual level.

Within the factors relating to the hospital level, the four most frequently retrieved were:

- "Strong and committed leadership (management involvement at all stages of building up long-term quality improvement actions)" in the "Governance" category;
- "Quality improvement team" (composition, management, organization, experience, multidisciplinary and degree of competence of the quality team) in the "Quality management system" category;
- "Dedicated resources" (time, skills, material and financial resources), in the "Quality management system" category;
- "Production and diffusion of recommendations and professional practice protocols" (Evidence based practices) in the "Organization of work" category.

The largest number of references was coded to the "quality management system" sub-category.

Barriers

The limiting factors, or barriers, listed at hospital level were also illustrated in the literature as well as the "individual factors" and "professional interaction" categories. At hospital level, "failure in the local system to produce, disseminate and appropriate best practice guides" in the "Organization of work" category, "lack of dedicated resources" (material resources, human time and capital) and "information system inadequate and difficult to access" were often retrieved. The factors referring to the individual level were "trivialization (low perceived importance of risk), denial of reality, of the patient's feelings" in the category "factor associated with context", and "lack of skills or knowledge" among factors associated with the subject himself. Finally, one last factor was at department level, in the "Organization of work" category. This concerned "the absence of best practice protocols".

Discussion

Leadership, professional commitment, training and learning about methods and tools associated with quality and risk management, the existence of a safety culture, the will to see the structure evolve and to mobilize suitably adapted resources etc., these are issues that have to be confronted on a daily basis in hospitals committed to the quality process. This large-scale and multidisciplinary review of the literature provides a list of categories and of factors to promote progress in quality improvement and risk management actions or programs, which are useful both for researchers, and hospitals and health professionals.

Strengths of the study

Most articles in the literature focused on analyzing a single type of factor, either barriers or success factors. For a more global vision of the elements that influence how quality improvement efforts are progressing, this literature review covers both types of factor and thus shows the positive and associated negative elements jointly. It also considers two levels of appreciation of actions and programs: implementation and level of success.

Our analysis followed the DUQUE conceptual model, with determinants linked to external pressures from governance of the health system (regulations, legal environment, systems such as certification, financial constraints and professional population, etc.), and pressures exerted by the hospital context. Thanks mainly to the use of qualitative literature, we complemented the DUQUE model [10] using individual determinants, and those associated with professional interactions. This latter category of determinants is rarely studied, yet observation on a daily basis indicates that it could play an important role. Although the Human Factors approach has not yet reached a sufficiently high level of maturity in the area of health care [29], an increasing amount of research is currently being undertaken into links between patient safety and psychosocial factors [30-32].

The main difficulty was encountered during the categorization phase as terminology and definitions were not consistent across articles [33]. To overcome this problem, the multidisciplinary working group discussed each factor extracted from the literature, then attempted to define them (something that was often not done in the articles) then categorize them. The N'VIVO software tool can be considered as an added value in that, during the work on categorization, it enabled us to remain as close as possible to the real sense of the factors referred to in the articles, both in terms of meaning and context.

Limitations of the study

N'VIVO tool make it possible to provide quantitative results such as the number of reference in each category according to the methodological approach (quantitative or qualitative studies). As the references were extracted from both literature reviews and from original articles, the numbers presented in figure 2 are to be used with cautious, to provide some trends. The workload necessary to come back to all articles from the six literature reviews was not possible for financial reasons. The main limitation of this work is therefore not to be able to present a hierarchy of factors based on the number of occurrence.

The hierarchical organization of factors is however highly difficult for other methodological reasons: the study of the relationship between factors and progress/outcome needs complex designs (longitudinal designs) and comprehensive data collection (including all factors that are listed in this paper). Recent large-scale works performed in the US or in Europe (DUQUE and QUASER EU-funded projects) are remarkable projects to reach the latter, using quantitative or qualitative approaches. The former, the use of longitudinal designs, is so complicated that it seems quasi impossible for technical (interactions, effect modifiers, history bias, etc.) and financial reasons (number of statistical units, need of specific data collection).

We must therefore stress that associations between the factors identified and progress made in actions and programs or successful results are not causal. In particular, we do not know the expected impact of activating these factors. Finally, it is possible that there are some important factors that have not yet been identified, especially in the areas of psychosocial factors or interaction between professionals, which have not so far been studied very much in the literature.

According to the inclusion criteria, these results apply to a hospital environment (public or private settings) and not to other types of healthcare organizations [34-42].

Lessons learned

The facilitators and barriers encountered most frequently in this literature review are to be found at hospital level. Results suggest the importance of the role of management involvement in all stages of building up a sustainable quality improvement and risk management action [43-48]. However, the impetus behind these actions does not come only from the commitment by top management and their leadership style; it also depends on the presence of a quality organizational structure that is concerned to take a certain number of elements into consideration, such as the structuring and the skills of the quality improvement team [49-53]. A lack of hospital resources is seen as a major barrier to putting quality actions in place. This dimension covers several aspects, including that of time constraints, which recurs fairly regularly in the literature [54-57].

In addition, there is a large consensus in the literature on the link between the organization of work in hospitals and the management (and/or governance), regarding the setting up of quality improvement and risk management actions. The implementation of these programs/actions by the governing body is all the more effective when it is integrated into the organization of daily work within the hospital. On the other hand,

any flaw in the organization of work and failure to carry out the project would indeed be barriers to implementing quality improvement and risk management actions within the hospital. Our analysis of the literature confirmed the idea that the dynamic elements of the organizational processes (leadership, collaboration, communication) would be better facilitators of quality than the stable elements of the organizational structure (size, status, team and sophistication, technical resources etc.) [58]. Organizational change brings together a great many levers on which organizations should act in order to evolve in a dynamic quality context. The dimensions mentioned above are part of this. Other research has shown that organizational change is more successful when the team feels it has the appropriate skills (empowerment), when the official managers are not afraid to allow others to be in charge of driving the work of change [59-61].

Finally, the majority of studies highlight the important role of cultural barriers or facilitators. An organizational culture focusing on quality is an essential platform for setting up quality improvement and developing a culture of patient safety [62]. An organizational culture which focuses on the team and/or innovation appears to contribute to the safety climate, and would be more effective in terms of quality improvement efforts, team working, staff morale, patient satisfaction, and overall safety climate [63,64].

Qualitative research was considered in this study in order to overcome the limitations of Kaplan's literature review [3] which focused exclusively on quantitative methods. This review provided information linked essentially with the structural characteristics of the organization, based on quality and including factors like those associated with the structure of a quality team, the availability of resources and technical equipment. Articles produced using qualitative methods whereas revealing this type of factor, stress the importance of elements of a psychosocial order. Psychosocial factors contributing to character are defined as characteristics that derive from the psychology of the individual or from the structure or functioning of social groups. Social characteristics belong in this category, such as lifestyles, cultural characteristics, values and beliefs governing socialization and psychological characteristics like attitudes and personality. Qualitative method based articles also revealed the importance of the notion of culture. Organizational culture, for example, especially a change in culture (promotion of a quality improvement culture, learning how to change, etc.) is a key factor that can hinder or facilitate setting up a quality system, or quality actions or programs in general [15-17,19-21]. In addition, qualitative literature repeatedly stresses elements associated with professional interactions, the nature of relationships and the climate in the work environment. Notions of sharing, communication and relationships within a working team, confidence, collegiality, respect are all socio-structural and psychosocial traits that qualitative techniques have been able to identify [12-15,19-21].

Conclusion

This review falls under the heading of improvement science, by looking for levers that institutions and professionals can apply in ongoing procedures to ensure that progress continues to be made in quality improvement and risk management actions and programs. These levers, both facilitators and barriers, are ordered in categories that can be used as a check-list when assessing progress in actions and programs. To date, in terms of the results of this literature review, research has found more facilitators than barriers. Would it suggests that the very fact of respecting facilitating factors could be a guarantee of a successful outcome for a quality improvement and risk management action (best practice guide); and that if some actions fail despite this, then it is probably because insufficient consideration has been given to the barriers? If actions and programs are to be successful, it is probably just as important to take the barriers into account; however, they are possibly more difficult to identify than the facilitators as they are apparently more often psychosocial in nature or relate to interactions between professionals. This review highlight the current knowledge gaps on these latter factors and primary research should focus on a structured identification of barriers, in particular on individual factors.

Competing Interests

None

Authors' Contribution

TR, LN and ZP have carried out the review of the literature by investigating the databases, select relevant articles. PM and BQ have coordinated and supervised the literature review. PM leaded the working group that classified the factors. The working group was composed by JLQ, FS, BQ, MS, XD, MPB, TR, LN, ZP and HE.

All the authors were involved in the drafting of article, have read and approved the final version of the article.

Authors' Information

PM was the director of a regional centre for quality and safety (Ccecqa), which implement quality and safety programs in 150 public and private hospitals in the Aquitaine region, France. He belongs to the expert group of the EU-funded DUQUE project and FS was country-coordinator of the project. JLQ and FS are two senior public health doctors, in charge respectively of the risk management projects and of the quality improvement projects in the Ccecqa regional centre. MS is professor in health management and BQ is professor in psychology at the Bordeaux Segalen University. XD and MPB are quality director and chief medical officer of an upper-middle size public hospital (900 beds).

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