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MANAGING A CHANGE IN THE IMPLEMENTATION OF AN ELECTRONIC MEDICAL RECORD IN HOSPITALS: HEAD NURSES' ROLE AS CHANGE LEADERS – A NARRATIVE LITERATURE REVIEW

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Abstract
The implementation of an electronic medical record (EMR) in hospitals constitutes a process of complex organizational change, integrating technological, procedural, and cultural aspects. Nursing staffs, particularly head nurses, are at the front of the process, being the largest professional group in the healthcare system and main users of clinical recording systems. Despite their centrality, many head nurses are required to lead the implementation process without any designated training or formal preparation for change management. This narrative review explores head nurses' role in the promotion of EMR systems implementation, with a focus on management challenges and successful action methods. The review has identified recurrent barriers, including: staffs' resistance to change, documentation overload, digital orientation gaps, lack of organizational support, and incompatibility between the system structure and existing work processes. Moreover, the review presents efficient implementation strategies, such as: preliminary involvement of the field, gradual and adapted training, continuous support, open communication, and local adjustment. The paper's main conclusion is that head nurses should be acknowledged not only as clinical leaders, but also as strategic partners and organizational change agents. Hence, they should be offered structured training, practical management tools, and systemic support. Finally, the review recommends promoting future studies that examine the impact of advanced management training on the implementation quality and stability over time.
Keywords: *Electronic Medical Record (EMR); head nurses; organizational change; implementation strategies; change management in nursing.*
JEL Classification: M1; I1; I18.

1. INTRODUCTION

The implementation of an electronic medical record (EMR) in the healthcare system is a complex and challenging organizational process that involves both technological, procedural, and cultural changes (Kabukye *et al.*, 2020). During the last decade, digital information systems have become a cornerstone in the infrastructure of advanced healthcare systems, enhancing the quality and safety of patients' care, increasing procedural efficiency, and making clinical information accessible to medical staffs in real-time (Cresswell *et al.*, 2021; Dhingra and Dabas, 2020). The EMR is not only a system of recording patients' care processes. Rather, it reflects organizational work processes, facilitates a consistent follow-up of patients' condition, and serves as a management and support tool for making clinical and management decisions (Sutton *et al.*, 2020).

Nursing staffs and, especially, head nurses are a key component in the implementation process. Nurses are the largest group among healthcare professions, and they are the main users of the EMR system (Strudwick *et al.*, 2017). Due to their direct and constant involvement in daily patients' care, the use of the EMR system is one of the most comprehensive and meaningful activities. Nevertheless, in spite of their crucial involvement, many head nurses have to lead the implementation processes without any designated training in change management, lacking necessary skills of management, communication, planning, and staff support. Consequently, the main gap resides in the fact that in most cases they have no formal professional tools for performing this management role.

In Israel's state-owned hospitals, head nurses are chosen through a public tender that includes a professional committee of examiners. The job requirements focus on clinical experience, academic training, staff management competences, and extensive professional understanding. Yet, candidates are not required to have a formal training in management. In some organizations, according to the policy of the nurses' manager, head nurses are offered the option of attending designated advanced management courses ("senior management course"). These courses are designed for head nurses and deputy head nurses, but are not mandatory for this position. Hence, many head nurses assume this role without any comprehensive training and tools for managing a change and leading systemic processes.

Due to the centrality of nursing staffs in hospital care processes, the nurses' conduct, particularly that of head nurses, is crucial for a successful implementation. Head nurses play a dual role. On the one hand they are clinical and management leaders who are in charge of the ward and of the staff's functioning. On the other hand, they constitute a connecting link between the hospital management and the field (Strudwick *et al.*, 2019), being responsible for implementing a policy of quality and safety of the patients' care, as well as managing structural and clinical changes. Head nurses' role consists of recruiting the staff, creating motivation, settling conflicts and coping with

resistance to changes (Alqahtani *et al.*, 2017; Cresswell *et al.*, 2021). This role becomes especially vital in an era whereby an extensive conceptual and technological change is required, e.g., EMR system implementation, rendering the topic of this paper very important.

By reviewing the existing literature, this paper aims to provide an insight about change management in the processes of EMR system implementation, while focusing on head nurses' role. The review relates to theoretical models of change management, head nurses' management and leadership functions, common challenges in the implementation process, recommended strategies of change promotion, and contribution of implementation to the quality and safety of patients' care.

Structure of the paper: This paper begins by presenting the theoretical aspects of change management in healthcare organizations, providing a foundation for the understanding of organizational transformation processes. It then explores the role of head nurses as leaders of change, emphasizing their impact on team dynamics and implementation success. Next, the discussion focuses on the challenges and barriers that arise during the implementation of Electronic Medical Record (EMR) systems. This is followed by an examination of the way EMR implementation affects the quality and safety of patients' care. Finally, the paper outlines key management strategies that can support and promote successful implementation of EMR systems in clinical settings.

Definition of Key Terms: In the present paper, by *Electronic Medical Record (EMR)* we refer to a digital version of a patients' paper chart that enables the storage, retrieval, and management of medical information within a healthcare organization. The term *head nurse* refers to the senior nurse responsible for supervising nursing staff, managing departmental operations, and leading changes in clinical practice at the ward level.

2. THEORETICAL ASPECTS OF CHANGE MANAGEMENT IN HEALTHCARE ORGANIZATIONS

The updated empirical literature illustrates that an organizational change in healthcare systems is a complex process. It involves emotional, professional, and cultural challenges, particularly when this concerns implementation of new technologies, such as electronic medical record (EMR). Implementation of clinical information systems is considered today as one of the key tasks of modern healthcare institutions. However, their success depends less on technological developments themselves, and more on the ability of the organization to manage an effective change among both the workers and managers (Cresswell *et al.*, 2021).

A technological change of this kind is perceived as a deep socio-organizational change, since it touches the core of the clinical practice – recording, decision-making, inter-profession communication, and work culture. EMR systems do not only change the work tools, but also affect perceptions and

professional identity of staff members, in particular nurses that constitute their main users. Hence, managing the implementation process requires a theoretical and practical comprehension of the organizational change principles.

Several theoretical models assist in the understanding of change management. One of the common models is the 8-stage model of Kotter (1995). This model proposes a systematic methodology for the implementation of an organizational change that involves, among others, creating a sense of urgency, setting up a coalition of leaders, developing a vision and strategy, communicating the vision, eliminating obstacles, attaining short-term victories, consolidating the achievements, and implementing the change in the organizational culture. Within the framework of the literature review in the field of healthcare, the change model devised by Kotter (1995) has been the most extensively implemented in projects of change, especially in the context of improved quality, clinical change, and technologies implementation, mainly on the ward or unit level (Harrison *et al.*, 2021). Implementation of the model in projects under the leadership of nurse teams illustrated a significant improvement in indices, such as team-based communication, patients' safety, and efficient work processes.

The review of Harrison *et al.* (2021) demonstrates that the strength of Kotter's model does not reside in formal tutoring for action. Rather, it creates a proper framework that leads change agents in the understanding, planning and management of the implementation process over time. The model has helped clinical leaders, among them head nurses, in identifying crucial points of the process, motivating staff members' motivation, and ensuring stable and long-lasting changes. Integrating the model with additional methods of quality and implementation management has been proven efficient for the creation of a change-supporting organizational culture, particularly when the change agents were members of the clinical staffs and not only of the organization's management. Moreover, a complex process such as implementation of a clinical system, requires a strong departmental leadership, in particular by the head nurses, in order to mediate the change vision, break it down into activities in the field, and lead the staff in areas of uncertainty.

The model conceived by Kotter (1995) offers a basic infrastructure for understanding a complex environment in the healthcare system and it has served as a foundation for structuring many change processes in the implementation of medical information systems. In a study of EMR system implementation conducted in a South African hospital, the participants reported that the Kotter model had served as a basis for understanding the complex change and assisted in analyzing the workers' changing conduct while using the system (Msomi *et al.*, 2021).

Another highly valuable model is the Technology Acceptance Model (TAM) devised by Davis (1989). It focuses on psychological factors that motivate users to embrace a new technology. According to this model, two key variables affect the intention of use in practice: perceived usefulness and perceived ease of use. In

other words, workers will adopt the system if they believe it improves their work and can be used rather easily. Studies of nursing have found that when nurse teams understand the clinical contribution of the EMR system – for example: prevention of errors, accessibility of information, improvement of recording, and sufficient training experience – the degree of adoption and commitment to change is considerably higher (Alanazi *et al.*, 2020; Kruse *et al.*, 2016).

In this context, head nurses play an important role of mediating between the technological system and the staff. Head nurses' ability to transmit the message, i.e., what is the usefulness of the system to each and every nurse, or how does its use become easy, directly affects the positive response. From this aspect, the TAM model allows planning and preliminary management of supportive steps: adapting the user's interface, reducing mental overload, enhancing the training, and so on (Holden and Karsh, 2010).

In addition to specific models, a central concept in change management is Organizational Readiness for Change, both on the organization and staff level, and without it, an organizational change might fail. This concept encompasses the staff members' emotional commitment to change, the belief in the collective ability to implement it, and the available organizational resources (Weiner, 2008).

Studies indicate that preliminary assessment of the level of readiness allows identification of crucial gaps even prior to the implementation, cope with them in an initiated manner and, thus, considerably improve the project's chances of success (Kabukye *et al.*, 2020). A study conducted in northern Ethiopia showed that organizations that had performed a readiness assessment, including examination of the staff's positions, technological training, and existing infrastructures, were more successful in workers' recruitment, resistance reduction, and promotion of an effective and meaningful EMR system implementation (Yilma *et al.*, 2023). The researchers underscored that low readiness level could lead to difficulties in the implementation and to the staffs' sense of frustration. Another review (Afrizal *et al.*, 2019) illustrated that organizations that had not performed a regular readiness assessment, tended to face barriers, such as lack of digital competence, negative attitudes towards change, and work overload that rendered the adoption of the technology much more difficult.

To sum up, effective change management in healthcare organizations, e.g., EMR system implementation, is a process that requires leadership, planning, and comprehension of human dynamics. The integration of models such as TAM, Kotter's model (1995), and Organizational Readiness for Change, facilitates a systemic view that supports the planning of the implementation in advance and the optimal response to challenges that emerge during the implementation of the change. In this sense, the understanding that a successful implementation process has both technical and social aspects allows the management and the head nurses to plan proactive steps, design a vision and collaboration, tutor and support the staff, and ascertain that the organization is ready for the change.

3. HEAD NURSES' ROLE AS CHANGE LEADERS

During the last decades, the healthcare system experienced frequent and continuous changes that were sometimes radical: structural, technological, budgetary, and clinical. These changes were not one-time events but rather a continuous organizational situation (Morrison and Jensen, 2022). Within this dynamic reality, the nursing staffs are the first to experience the practical effects of these changes, either in the implementation of an EMR system, organizational mergers, or transition to a new policy of quality. In fact, nurses, and mainly head nurses, manage the field and lead the change implementation from theory to practice.

Updated studies illustrate that head nurses perceive the change as an inseparable part of their work life. Most of them have experienced throughout their career a continuous sequence of re-organization, process improvement, and system upgrading (Salmela *et al.*, 2013). They consider themselves as leaders of a daily change, while adjusting the functioning of the department and the staff to changing needs, even without being formally called "change managers" (Salmela *et al.*, 2013). Moreover, from the head nurses' point of view, a change is also an opportunity for improving patients' care. However, it is always accompanied by uncertainty and a sense of responsibility burden, particularly when they do not have sufficient authority, support, or time to lead the change in an optimal way. As indicated by the participants in the Finnish study conducted by Salmela *et al.* (2013), they described themselves as active yet at the same time "bystander observers": involved daily but without really having an impact on the shaping of the wide organizational process.

In the case of leading a change and implementing an EMR system, head nurses' role consists of three central layers (Arabi *et al.*, 2022): professional leading in practice – tutoring, supervision, coordination with the IT team and the management; emotional and behavioral support of the staff by providing a response to apprehensions, addressing resistance, making the system accessible; and representing the staff vis-à-vis the management by transferring gaps, barriers, and requests bottom-up.

Arabi *et al.* (2022) conducted a study in Saudi Arabia. Their findings showed that the integration of the local leadership teams, head nurses and super-users, was a crucial component in the successful implementation of an EMR system through a practical collaboration with the hospital management (Arabi *et al.*, 2022). The nurses were trained in advance, served as a source of support for the staff in the field, and organized tutorials that reduced resistance and increased responsiveness, up to a high level of satisfaction among all the teams.

In addition to the practical functioning, the empirical literature engages also in the head nurses' perceptions and personal feelings in times of change. An extensive qualitative study conducted in Denmark (Morrison and Jensen, 2022), found that many head nurses felt "between a rock and a hard place". On the one hand, the hospital management expected them to accomplish the goals of a rapid

change, and on the other hand, it expected them to demonstrate stability, defense and sensitive leadership (Morrison and Jensen, 2022). The head nurses described an emotional overload, a sense of organizational loneliness, lack of role's clarity and, sometimes, even an undermined management identity. Many felt that they did not have a clear organizational vision, sufficient authority, and no explanations about the expectations from them. This reality entailed a gap between the nurses' values to which they were committed and the operational demands they had to implement. This resulted in burnout, confusion, and even professional anxiety. In other words, whereas in practice they were leading the daily implementation, they were not always involved in the planning, decision-making or support mechanisms of the senior management, namely leading without control.

Hansell (2018) specifies several essential conditions for the success of middle-level managers in change processes: role clarity, active support by the management, a sense of ownership and authority, real involvement in shaping the change, as well as learning and sharing forums. Without these conditions, even committed and experienced managers find it hard to lead a meaningful change. When head nurses feel trust, support, and a sense of belonging to the process, they can propel the staff forward, implement a change in a positive manner, and preserve the value-oriented core of nursing also in times of an organizational change.

In spite of the challenges, head nurses continue demonstrating a deep commitment to the values of nursing also in times of change. They perceive their role not only as managers of a process but also as keepers of the "tradition of concern", namely personal attitude, human care, and value-based professionalism (Salmela *et al.*, 2013). Even when the change is being led from the outside or being dictated by political bodies, head nurses continue seeking ways for translating these values into the new reality, trying to balance between reforms and maintenance of the staff and the patients' well-being.

To sum up this chapter, in an era of constant change in the healthcare system, head nurses' role becomes more crucial than ever. They are the mediators, leaders, and holders of the system between the management and the staff that executes the decisions in practice. A successful implementation of an EMR system or of any other technological change, depends not only on technology or planning, but also on a nursing leadership in the field, a leadership that is connected to the staff and the values, collaborates, and is supported from above. In such a situation, the change process turns from a turmoil into a stimulus of development, from a need to excellence.

4. CHALLENGES AND BARRIERS IN AN EMR SYSTEM IMPLEMENTATION

The transition to the use of EMR in healthcare systems is a strategic move, designed to enhance the quality, safety, and efficiency of patients' care (Sutton *et al.*, 2020). Nevertheless, the process of an EMR system implementation

transpires in a complex environment, characterized by multiple players, systemic pressures, and regulatory demands. The empirical literature indicates that this concerns a multi-layer challenge that comprises technological, organizational, professional and emotional barriers (Alqahtani *et al.*, 2017; Gesulga *et al.*, 2017; Kruse *et al.*, 2016) also among the nursing staff and the heed nurses who lead the implementation on the wards' level.

Studies have shown that the resistance of staff members, and particularly of nurses, is not based on technological antagonism but it mostly stems from an entirety of emotions: lack of confidence in personal capabilities, a sense of exclusion from the decision-making process, apprehension of losing control, and a feeling of accumulated burden (Hansell, 2018; Morrison and Jensen, 2022; Salmela *et al.*, 2013). Cho *et al.* (2021) underscore that resistance to change is the main predictor of resistance-oriented behavior in practice, such as partial use, delay in recording information or passive sabotage. The more nurses felt that the system was not useful or encountered difficulties in using it, the stronger was the resistance.

Another key element of the implementation process is burden of documentation in nursing (Gesner *et al.*, 2022). Kruse *et al.* (2016) indicate that one of the phenomena that emerged following the transition to digital documentation is an increased expectation for more detailed documents expressed by management, regulators, and insurance bodies. The system "invites" additional documentation – mandatory fields, automatic alerts, detailed screen representations – expanding the documentation tasks compared to previous systems.

Gesner *et al.* (2022) found a direct relation between burden of documentation and nurses' burnout. Many nurses feel that their daily work focuses more on documentation than on patients' care, leading to fatigue, frustration, and loss of contact with the patients. Documentation is sometimes perceived as a bureaucratic task that has no clinical contribution, especially in the case of dual documentation, unnecessary regulatory demands, and a non-intuitive interface.

A considerable barrier in the implementation process is gaps in the nursing staff's level of digital competence, particularly among older nurses. Tissera *et al.* (2021) describe the lack of confidence, confusion, and fear that older nurses feel more as far as digital systems are concerned. Many of them sense that the computerized system threatens their professional identity and is perceived as a tool that distances them from the patients.

Gesulga *et al.* (2017) emphasize that the lack of effective training and continuous support is one of the highly recurrent barriers in many systems. Head nurses who lead the training in practice, do not always benefit from a comprehensive training themselves, resulting in a dual gap: in their practice as well as in their ability to lead a change.

Studies indicate that one of the main reasons for difficulties in implementation is insufficient organizational support. Hansell (2018) and Salmela *et al.* (2013) argue that head nurses describe a feeling of professional isolation. On

the one hand, the management dictates many demands for leading a change, while on the other hand they do not receive actual backup, formal authority, or involvement in the planning. Kruse *et al.* (2016) identify the lack of technical support, as well as of investment in infrastructures and user interface as one of the barriers that lead to delay, resistance, and dropout from using the system.

Similarly, Arabi *et al.* (2022) indicate that the success of the implementation process depends on the proactive involvement of the field management – with an emphasis on head nurses – in the planning, tutoring and team leading. When this involvement is systematic and is supported by the hospital management, the resistance is reduced and the implementation becomes more successful.

Resistance to the use of an EMR system is not always openly stated. Sometimes, it is manifested by covert behavior, i.e., partial use, delay in documenting the information, or system bypassing. Cho *et al.* (2021) have found that positions of colleagues in the ward directly affect the level of resistance. When there is a supportive atmosphere and positive discourse, the chance of collaboration increases. Head nurses are required to identify these patterns and create a positive and a change-promoting culture among the staff.

To sum up this chapter, the process of an EMR system implementation is not only technological, and is also a deep social, emotional, and organizational process that encompasses aspects of people, organization, and technology. The various barriers reflect the tension between the systemic policy and the clinical field: between regulatory demands and nursing values, between a digital vision and daily burden. Within this arena, head nurses are key figures: they lead, mediate, tutor, and hold the change process. In order to properly accomplish that, a holistic response is required, including: strong organizational support, appropriate training, involvement in planning, emotional and professional support, and flexible mechanisms that facilitate adaptation of the system to the work processes in the ward.

5. IMPACT OF THE EMR SYSTEM IMPLEMENTATION ON THE QUALITY AND SAFETY OF PATIENTS' CARE

The EMR system implementation in hospitals aims to enhance the quality and safety of patients' care. This is achieved by computerized data management, systematic documentation, availability of information in real-time, and support in making clinical decisions. The EMR system is designated to improve dramatically the healthcare service indices. However, the empirical literature depicts a complex picture. On the one hand, evidence-based improvements in a variety of quality indices, while on the other hand operational, technological, and cultural challenges that might delay the materialization of the potential, as well as harm the safety of patients' care (Howe *et al.*, 2018).

Studies illustrate the contribution of the EMR system to the reduction of medication errors, improvement of allergies documentation, identification of drug interaction, and promotion of uniform clinical instructions (Gesulga *et al.*, 2017; Kruse *et al.*, 2016). The integration of a clinical decision support system (CDSS) into the EMR system creates crucial alerts and clinical reminders that enhance the accuracy of patients' care (Sutton *et al.*, 2020).

Many studies showed a decrease in the rates of acquired morbidity, such as infections, pressure ulcers, and post-operative blood clots, mainly when a full medication functionality is applied (Gatiti *et al.*, 2021; Trout *et al.*, 2022). Moreover, studies found shorter clinical reaction times following an improved information accessibility.

The EMR system allows accessibility of multi-disciplinary and accurate data, entailing coordination between nurses, doctors, dieticians, and other professionals (Gatiti *et al.*, 2021). Furthermore, the system enables a systematic monitoring of clinical progress, reduction of documentation duality, and decision-making based on updated information. Studies illustrated a positive relation between the use of the EMR system and the increase in the quality of patients' care regarding chronical diagnoses, discharge efficiency, and patients' satisfaction (Arabi *et al.*, 2022; Gatiti *et al.*, 2021).

In addition to the advantages, studies indicate also errors and operational challenges that might be caused as a result of an unadjusted interface. Howe *et al.* (2018) specify that faults in the EMR system, such as alert fatigue, defective information presentation, or erroneous interface of data documentation have actually caused medical errors that harmed the patients. Bates and Singh (2018) expand the criticism and suggest that together with focused successes, the rate of harms that can be prevented remains high, among others due to documentation overload, erroneous data replication, and lack of tools for active safety monitoring. These findings highlight the importance of developing user-friendly systems, including compliance with the workflow of the caring teams.

The empirical literature indicates that a human factor, particularly head nurses' role, constitutes a key to a successful implementation. When ward managers are involved in the planning, tutoring, and monitoring the use, the staff's satisfaction grows and the likelihood of errors or partial use is decreased (Arabi *et al.*, 2022; Tissera *et al.*, 2021).

To sum up this chapter, the EMR system serves as a major tool for improving the quality and safety of patients' care; yet, it is not a goal by itself. The positive impact depends on the integration of adapted technological design, effective training, supportive organizational culture, and consistent use by all the teams. Head nurses are at a junction where technology, policy and practice converge and, hence, their role in leading a high-quality digital change is essential.

6. MANAGEMENT STRATEGIES FOR PROMOTION OF CHANGE AND SUCCESSFUL IMPLEMENTATION

The EMR system implementation is a wide-range cultural-organizational process that involves a workflow change, documentation processes, decision-making, and coordination between teams. This concerns not only a new technology but also a deep change of the clinical practice. In the past, the documentation and clinical management processes were based on manual records that were many times incomplete, inaccessible in real-time, and frequently suffered from errors in the transmission between teams and in the reading. This work method limited the ability to follow-up the sequence of patients' care, process clinical information rapidly, and coordinate between different position holders, entailing a risk of undermining the quality and safety of the care. The transition to a computerized system aims to enable immediate availability of information, accurate documentation, reduction of errors, and improvement in the process of making clinical and management decisions. The accomplishment of this goal necessitates a setup of management strategies for ensuring that the transition to a computerized system enhances rather than lowers the quality and safety of patients' care.

The empirical literature attributes great importance to a preliminary and meaningful involvement of field staffs, especially head nurses, in the planning stages of the EMR system, the end-users being partners to the design of the interface, the choice of workflows, and procedures writing. The system is perceived more relevant, resistance decreases, and the chances of a successful implementation are rising (Fennelly *et al.*, 2020; Hansell, 2018). Moreover, this involvement assists in the identification of gaps between the system and the clinical reality, facilitating a revision in real-time.

Professional tutoring, offered by stages and according to the needs of different groups (e.g., older nurses, new nurses, or overburdened wards) has been found as an important component in the readiness for implementation (McCarthy and Eastman, 2010; Tissera *et al.*, 2021). In addition to basic technical training, it is important to create an organizational learning culture: simulations and ward practice, short and recurrent tutoring, super-users among the staff, and available continuous support also after the implementation. This approach increases a sense of self-efficacy and decreases uncertainty, particularly during periods of transition.

Effective management communication is a cornerstone of a successful change. Various studies recommend scheduling an open and transparent discourse with the staffs, rendering accessible not only the technical information, but also the logic, aims, and stages of the process (McCarthy and Eastman, 2010). Furthermore, messages should be adapted to the decision-makers in the ward, including a response to questions such as: How will the system improve my patients' care? Where am I likely to encounter difficulties? What is expected

to remain unchanged? (McCarthy and Eastman, 2010). Such communication builds trust, reduces resistance, and enables a professional discourse also in periods of organizational tension.

Side-by-side with the support of the field staffs, it is important to invest in head nurses' training as managers of the implementation process in the ward. Many head nurses fulfil in practice the role of a change manager, but not always have they received tools for that. The empirical literature recommends equipping head nurses with knowledge and tools from the field of change management, among others: models such as the 8-Step Model conceived by Kotter (1995), that focuses on the mobilization of vision, elimination of barriers, and implementation of change in the organizational culture; the Awareness, Desire, Knowledge, Ability, Reinforcement (ADKAR) model, that suggest focusing on the individuals: raising awareness, building a desire, inculcation of knowledge, practice abilities, and reinforcement (Paramitha *et al.*, 2020). Through these models, head nurses can understand where every team member is from the aspect of readiness for change, and build an adapted response, both emotional, professional, and functional.

In order to lead a complex change process, the head nurses' management competences should be expanded. The required tools include: stakeholders' analysis and resistance management, prioritization of overloads and time management, inter-team communication and discourse with the management, formulating procedures and planning a tutoring layout, as well measuring the success of the implementation and monitoring the staff's reactions. In other words, head nurses actually become change project managers and, therefore, they should be offered the appropriate training, authority and backup.

On top of head nurses' activity in the field, it is highly important to provide the systemic conditions that will help them to execute their role successfully. The empirical literature recommends a designated technical support in the wards throughout the implementation period: allocation of designated time for learning and documentation, adapted computerized infrastructures, formal acknowledgement of head nurses as part of the organizational leading team (Fennelly *et al.*, 2020).

To sum up this chapter, leading a successful implementation of an EMR system requires a multi-dimensional management approach: real involvement in the planning, gradual training, adapted communication, technical support and consolidated change management. In their unique capacity as field leaders, head nurses need to be ready not only technically, but be also management-oriented. Investing in their training, consolidating a management identity, and providing practical change management tools are prerequisites for a successful, safe, and high-quality implementation of the transition to a digital era in hospitalization wards.

7. CONCLUSIONS

This literature review discusses the process of an EMR system implementation out of a management perspective that focuses the attention on the complex and vital role of head nurses. The findings illustrate that head nurses play a key role, both in the daily operation of the system and in the leading of the change in the field. However, they sometimes do it without a designated training for change management or sufficient support infrastructure.

The review gave rise to several consistent challenges, among them burden of documentation, staff's resistance to change, lack of organizational readiness, and a gap between the technological policy and its implementation in practice. Moreover, the review presented effective management and operational strategies, comprising staff's involvement in the planning, adapted tutoring, proactive support, clear communication, and building a professional infrastructure for the head nurses' leadership in the department.

The conclusion drawn from the literature review is that we should develop a whole systemic response in the shape of a long-range professional development system that consists of: extending the acknowledgement of head nurses' central role as leaders of digital change processes in nursing; development of designated training pathways that focus on advanced management competences and practical tools for leading a change in healthcare organizations; structured and meaningful involvement of head nurses in the planning, leading, and implementation of technological and organizational change processes on the level of the ward and of the entire organization.

Moreover, another empirical development might contribute to the design of new nursing career pathways that will strengthen head nurses as managers of a clinical-technological change managers, linking the world of nursing with challenges of healthcare management in the 21st century.

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