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Organizational Barriers Facing Health Care Professionals in Relation to Health Information Technology - A Review

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ABSTRACT

Health care organizations and government agencies have been struggling to optimize the use of health information technology to improve the quality and safety of care and to achieve specific health care goals. Health information technology can be used to enhance care processes, support structured data collection, and improve communication among providers. The challenges of deploying health information technology are dynamic and complex. Not only is implementation difficult for health care organizations in general, but in the health care environment, professionals face specific barriers that must be confronted. These barriers can have a range of interrelated consequences at the individual, professional, and patient levels, including underuse or abandonment of health information technology, high information and communication load, lack of effective information exchange, and inefficient cooperative work.

Research has found that barriers and the impact of health information technology on professionals vary depending on the context in which it is used. The enactment of health information technology and the healthcare setting can greatly influence its benefits. It is important to study health information technology within the framework of complex workplace systems and cooperative care work. Methods: A systematic search strategy focused on health care professionals in relation to information and communication technologies. The search strategy aimed for an objective recruitment of publications in order to get an overview of the scope of the topic. This was performed by limiting the search to topics that are part of the title, abstract, or index of the publication, implying that the search was block limited. The main search string consisted of the following main concepts: professionals and/or practitioners, health/healthcare AND barriers OR problems OR issues OR interruptions OR challenges OR difficulties AND attitudes OR acceptance OR adoption OR resistance,

etc. By using different combinations of the two main concepts, various potential combinations of relevant MeSH and free text terms were generated. Conclusion: Evaluating and understanding current barriers and promoting behaviors through several solutions in the use of information technologies are crucial. It requires a thorough understanding of the factors that govern user acceptance and usage. This can often be done by considering the different ways in which individuals view perceived usefulness and perceived ease of use. These views are generally formulated through a combination of personal and organizational factors and influence the decision-making process. Organizations must invest in developing sound support systems. This will involve focusing on system quality, with special emphasis on simplicity and ease of use. Furthermore, health care planners must be aware and attempt to overcome the negative impact of fear, control, attitude, satisfaction, and anxiety. To encourage and promote health care professionals, it is important to couch the transition to new systems in terms familiar and relevant to the users, providing continuous and adequate support through the implementation period. This support should contribute to usage and performance behavior, helping professionals to derive satisfaction from their work. In conclusion, doctor learning and growth will depend largely on the level of understanding of patient care, the impact of health care professional motivations, and the organizational climate of health care.

KEYWORDS: Health Information Technology, healthcare organizations.

1. Introduction

Introduction: A generation after their initial inception, clinical health information technology (HIT) developmental efforts, user considerations, and person-related outcomes have significantly increased and hit the limelight. However, to date, research has mainly focused on how design and developmental factors have shaped clinicians' and other health care professionals' interactions with clinical HIT. User experiences and outcomes from more mature or even expired utilization have received relatively little supply-side research interest. However, maturation coincides with a decoupling between HIT visions and operational habits and utilization-related problems. Across healthcare settings of varying sizes, coverage, organizational, and infrastructure types, many health care professionals and patients take aim at HIT-induced issues in respective operationalization, infusion, and integration. Indeed, from multiple countries and several decades of utilization-related HIT experience, many reports and research contributions discuss and analyze various manifestations of HIT challenges and problems health care professionals encounter when interacting with available clinical HIT systems.

This literature review aims to contribute to the maturation analysis dilemma by reviewing an indicative sample of clinical HIT concepts, constructs, models, screening, and measurement instrumentation, and evidence-based knowledge about the long-neglected but meanwhile very frequent utilization-related HIT challenge and problem of user aging. The intention is that this intervention sets the stage for a comprehensive diagnostic effort that is needed to cope with HIT-induced stressors, identify respective facilitators, and capitalize on the opportunities successful HIT travelers tend to find and support. This literature review therefore also sets the stage

for the uncovering of the tools HIT makers and maintainers need to build and continuously perform and enrich.

1.1. Background and Significance

Health information technology is seen as a critical tool to be implemented in modern health care organizations to improve the quality of care and to increase the efficiency of health care staff. However, research has shown that health information technology implementation efforts fail to realize potential benefits and are often delayed or aborted owing to resistance from health care professionals. Lessons and insights can be gained, and tactics implemented, when barriers are identified and understood. A systematic, qualitative review was conducted to identify, summarize, and analyze the main organizational and occupational barriers facing health care professionals in relation to health information technology use in the health care sector. Sixty-six studies were reviewed.

The studies analyzed were at various levels of scale, from ward-based studies to studies conducted across multiple health care organizations along a national or international scale. Based on the results of this review, some suggestions are made about where the major organizational and occupational barriers to health information technology originate and the direction of future qualitative studies. The review finds that the health care sector is multi-layered, with inconsistent roles and expectations regarding the use of health information technology. The absence of consensus at the micro, meso, macro, and international levels adds ambiguity, creating stress and uncertainty about the implementation of health information technology within health care professionals' working lives and uncertainty about future roles in the health care sector.

2. Health Information Technology (HIT) in Healthcare

Health Information Technology has developed slowly compared to other industries, and healthcare lagged behind most other industries in the use of HIT. Prescriptions and orders may no longer be written by hand, which can be dangerously misread and filled or executed wrongly. Verbal orders and old physiological charts are disappearing and being entered electronically. Surgery and treatments are managed by computerized technology, nursing technology, and electronic records, and are no longer conducted like in the 'old' days. These innovative systems allow healthcare professionals to provide the highest level of safety possible for their clients. HIT must bring the ability to store extremely large databases that could not be processed or stored only a few years ago. HIT must provide the data to inform our clients and to evaluate outcomes of healthcare interventions on a daily basis. Without this activity, healthcare professionals will never be able to 'prove' themselves or to show which specialty's intervention is statistically the best.

Health IT will also create new interest among healthcare professionals to work with computers and reorganize duties. Finally, HIT, using wireless technology in the future, will address the cost of HIT and the needed increase in productivity. With these considerations in mind, it seems important to take advantage of HIT to create additional solutions in the present environment of healthcare that aim at the

possibility of focusing more on patient concerns and care, and less on purely administrative tasks, by managing to decrease the time spent on charting through restructuring it.

2.1. Definition and Scope

Health information technology (HIT) comprises a diverse range of tools for storing, communicating, retrieving, and managing health-related information used by people, organizations, and facilities associated with health care. The intent of HIT is to enrich the quality and effectiveness of health care while enhancing both individual and public health. However, users have often found HIT productivity gains as well as satisfaction decreases. While the benefits from HIT are potentially significant, many users are frustrated by its implementation and claim that HIT has either had little or no improvement in workplace efficiency or caused a degradation in the quality of patient care. Therefore, studies highlight the importance not only of addressing those healthcare professional barriers in using HIT but also of identifying the risks and unintended consequences resulting from the implementation and use of the system.

3. Organizational Barriers to HIT Adoption

Physicians and other healthcare professionals recognize that they need to make changes to their practices to address safety deficiencies and rising costs, among other challenges to care delivery. Embracing health information technology is critical as a first step in this process since, in its current state, most clinical facilities drastically underutilize technology for patient care. Unfortunately, most organizations confront major barriers as they move toward their HIT visions. These barriers come in many forms: technological and organizational. This text explores primarily the organizational barriers to implementation, as non-technological and organizational constraints are typically more difficult to overcome than technological barriers. (Gill et al.2024)(Madsen & Ulhøi, 2021)(Cresswell et al.2022)(Wesley Bonet, 2022)

Information systems and technologies can do great good in healthcare, improving the lives of millions of patients by making care more effective and less costly. However, routinely embedding them in clinical practice is an uphill battle. Far from binary, technology-driven change is a complicated process of technological, human, and institutional transformation, not a simple case of "build it, and they will come." The information revolution has bypassed the healthcare sector. Healthcare has invested less in information technology than any other fundamental U.S. industry, and this failure has left involved groups frustrated and angry. The payouts of appropriate investment in HIT will be better care, more productive caregivers, and reduced costs. However, organizations in the healthcare sector that fear the short-term costs of change more than its long-term benefits are less likely to make long-term investments. Executives recognize that in making comfortable decisions, they will keep everyone hunkered down, but at least no one's skin will turn blue; security is not the appropriate role. The real tactic in using IT is to shorten cycle times and inspire innovation. As colleague organizations in other industries have ably illustrated, observing this tactic reveals more doors to fresh opportunities.

3.1. Lack of Leadership Support

Leadership played a critical role in the introduction, implementation, and adoption of health information technology in organizations. The success or failure of health information technology is directly linked to the strength of leadership support. An analysis undertaken revealed that over time, the strength of leadership diminished as a barrier. Overall, the strength of leadership characterized as a barrier was up for grabs, suggesting that it is possible to win favor over time. What is notable is that the strength of leadership support was notably weak at the early stages, only changing if there was a serious enough catalyst. One possible catalyst for developing leadership strength is the strategic use of human resource management interventions. Investing in health information technology required a strong and influential decision-maker to endorse applications and own the initiative. A senior executive was thought to be necessary to tie clinical and administrative decision-makers together and promote the value of technology.

The time and attention of senior leaders were the catalysts for developing health information technology to realize its potential as a strategic priority. However, the potential impact of the new technology was not enough of a driver for upper-level leaders to actively and wholeheartedly engage, endorse, and advocate the appropriate support. As a consequence, the required support at the critical stages of diffusion was lacking. Overall, this lack of strong leadership to bring sight, motivation, and readiness to fight for and win more robust safety, legal, and technology-related outcomes appeared to temper support for health information technology in the early days. The perception of a "singing from the same hymn sheet" relationship development played a significant role in the ability of weak leadership support to be overruled. Furthermore, the finding that weak leadership support was seen as a barrier is exemplary.

4. Impact of Organizational Barriers on Health Care Professionals

This study found that organizational barriers can impact health care professionals in varied ways. When health care professionals are burdened by an unseen barrier, it may cause a range of negative impacts that extend to the patients and the organization. For instance, adverse effects can include the altered working mechanisms of the professionals. In particular, the previous studies stressed that many barriers could increase the work time, lead to time constraints, and as a result, could result in work overload. Examples of these barriers include time constraints, human resources limitations, cost barriers, workflow, and scope of the system. Hence, these unseen barriers not only increase the time commitment of health care professionals to work on personally identifiable information sensitive issues, but also can disrupt the workflow mechanism of the professionals.

Of particular interest is the negative impact on the scope of the system, which can be seen in a recent report that estimated that a new patient electronic health record modernization project will take 10 years—two to three years to complete planning and seven to eight to implement the new system, possibly one of the longest for electronic health records—due to the new scope being added to the system. Another

study states that being conscious about the direct integration of technological devices and applications used in care delivery into CMIS will impact time allocations of providers involved in the direct care of patients. These changes in the scope of the EHR system could interrupt the traditional roles of the professionals, which leads to concerns about whether the new processes are more effective, whether the providers' abilities are adequate to produce the new work, or whether the professionals would be liable for the patients within the new system. Upon closer investigation, many unintended consequences in the delivery of care through a computer-based provider order entry arose from the limitations of the system. Another study highlighted the misalignment of hospital capabilities and needs, convenience and information quality, and characteristics of personal information systems. As a result of these discrepancies, IT adoption was hindered by the fact that the electronic health record work involved entering structured information across the department and viewing structured data in the department. Generally, user resistance seems to increase when IT-related capability misaligns with job requirements, and it becomes a significant barrier to professor-based systems. (Tsai et al.2020)(Tayefi et al.2021)(Keshta & Odeh, 2021)(Rasmy et al., 2021)

4.1. Burnout and Job Dissatisfaction

Several studies have found a negative relationship between job satisfaction and burnout and the health care professionals' use of health information technology. A survey of mobile health care professionals found the lack of positive feedback from communication with a patient due to health information technology as a source of job dissatisfaction and unproductive communication, contributing to physician burnout. Similarly, in a mixed-methods study, health care professionals reported how the use of the patient portal had heightened their experiences of cognitive overload and perceived risk, working counter to patient engagement, support, or care quality. In a systematic review, significant barriers to using a portal were observed, and as a consequence noted more discomfort, and for some, burnout, as well as communication and care disruptions. To sum up, job dissatisfaction and an increased level of burnout are identified as barriers that can affect health care professionals. These organizational barriers regarding health care professionals should be given significant focus when introducing, adopting, and evaluating health information technology.

5. Strategies to Overcome Organizational Barriers

Several strategies are needed to overcome organizational barriers. First, the management philosophy and culture—that is, the values, beliefs, and cultural norms of the organization—must focus on using IT to improve health care quality. Physicians who believe that managers use IT primarily for cost-cutting, rather than to enhance care delivery, are less supportive of IT. The staff could have entered the data directly into the system on the wards, but this was not done because it was not part of their accepted routine.

Second, the importance of middle managers, such as departmental heads, in successful IT projects must be recognized. They are responsible for implementing

changes in work practices and must communicate their importance to staff members by emphasizing the benefits of changes. In the context of the present study, issues are feelings of disempowerment, staff members' inability to see the impact of their work on patient care, and envy and resentment existing between those staff allowed to use the current system and those who are not. Staff members' feelings could be addressed by giving users greater access to patient records. Even non-clinical staff members, who make a significant contribution to the procurement process, are given such access in some hospitals. Staff members would then see their decisions in this area being informed by patient needs, contributing to the improvement of patient care and perhaps even benefiting the staff member and his or her relatives as a result. The amelioration of resentment by focusing on the needs of different stakeholders is an important strategy to enhance organizational support for IT. It aims to allay those fears and reduce the complexity of detailed procedural descriptions by showing staff the ways in which they relate to true patient needs.

5.1. Training and Education Programs

Information and communication technology (ICT) and the life sciences, such as biotechnology and genetics, are rapidly expanding and are regarded as new advanced knowledge, which is divided into a specific discipline. Biomedical information technology (BMT) is an emerging technology and is one of the most important interdisciplinary subjects, combining domain knowledge of both life sciences and information science. In order to train high-quality professionals for the health field with technological skills, the health informatics engineering program has been established in Taiwan as the first experimental Biomedical Information Technology (BMIT) cluster. In the past decade, academic research for health informatics has increased significantly in related disciplines.

Physicians and nurses tend to have professional medical care knowledge but lack extensive computer programming knowledge or system analysis. In order to reduce the cost of expensive in-service training efforts, which are the best support for doctors and nurses in hospitals, a sound curriculum planning and learning environment shall be provided. In our proposed health informatics engineering program, about 58 subjects are grouped into four modules for each year, and the fourth year is divided into modules of industrial training and projects, in addition to discussing potential career guidance and job prospects. In order to achieve the goal of learning in the health informatics field, we usually place a large emphasis on instructional theories and methods, practical computer and laboratory experiments, and also require students to adopt these concepts in software and hardware design projects. Students gain various computer and communication abilities through those assignments. Health informatics engineering may well become an essential hub for modern health care progress and social enterprise in a large hospital by means of partitioned and collaborative efforts in many fields, as economic digital divide and access issues widen.

6. Conclusion and Future Directions

Conclusion: Health care organizations are continuously changing their information

systems, organizational procedures, and structures to accommodate health information technologies that support their health care professional practice. This health IT evolution is not going smoothly, as it is evident that many barriers are hindering the optimal use of HITs by health care professionals. Our study focused on the organizational issues that cause these barriers. Prior studies reviewing HIT barriers in health care organizations looked at HIT barriers merely from a non-harmonized technical, organizational, people, workflow, rules and regulations, business, charge, and network perspective. We did not restrict our study to a specific perspective or only discuss organizational or non-organizational barriers since the identification of the type of barrier is difficult due to the potential interaction between different kinds of HIT barriers and the inability of respondents to discriminate between the different types of HIT barriers. This prevented the drawing of a solid distinction between HIT barriers going beyond the individual types and encouraged a comprehensive assessment of barriers. This study provided a theoretical basis to obtain the most accurate manifestation of barriers to the use of HITs as experienced by health care professionals in organizations. This investigation gave insights into factors that were previously underexposed and highlighted factors that require further attention when evaluating HIT interventions. We demonstrated that a broad perspective on HIT barriers offers new and better opportunities to apply the concept of the innovation cycle in health care organizations. These insights will serve as the stepping stone for our next research step, which will be of a quantitative nature to research if statistically significant results or theoretical relationships can be determined. By conducting this future research, we hope to transform current knowledge on HIT barriers into knowledge that better informs HIT personnel so they can more effectively implement HIT, increase the effectiveness of HIT, and increase efficiency in health care delivery. These insights will guide health care organizations and their health professionals in their future HIT decisions. Our comprehensive understanding of the full complexity of HIT barriers might also help health care professionals in managing this process.

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