

Challenges Faced by Bedside Nurses in Utilizing HMIS (Hospital Management Information Systems): A Comprehensive Review

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Abstract

Aim of this comprehensive review to know about challenges faced by bedside nurses in utilizing HMIS hospital management information system to identify the gaps in this practice. Formulate the hypothesis and research gap with the help of this literature review is so beneficial. Total fifteen articles were finalized from 35 articles which are cited. Database google scholar, PubMed and CINHALL. Boolean operators “OR” and “AND” were used to searching the articles from database. Seven articles were belonged to south east Asian country and eight articles from European countries. Articles were selected according to title and keywords. According to this comprehensive review nurses are aware regarding HMIS hospital management

information system regardless of whether they are working in any unit of health care. Entire researchers of these literature review updated the hospital management information system. but somewhere nurses are facing challenges in utilizing hospital management information system due to load shading, lack of internet access and lac of training sessions. We want to acknowledged to all authors of the research those are utilized in this literature review to understand the Utilizing HMIS hospital management information system in nursing and knowledge of nursing regarding this technology. In this new renovation every nurse should be expert in documentation on HMIS hospital management information system. Hospital administration is responsible for training of staff regarding HMIS. It should be implemented in all hospitals. It prevents from loss or damage of data. This technology saves the health record for lifetime.

Keywords

HMIS, Bedside nurses, challenges, literature review

Introduction

Hospital management information system is a system to record the data regarding health of patients to maintain the data and to lose o damaging the data. hospital management information system is completely based on computer it can't be operated without the internet access. HMIS is a software which is designed for health care setup to maintain the hospital related data of patients. This study is a quantitative study with an observational research type, namely analytical using a cross-sectional study design (a cross-sectional study conducted at the Maria Walanda Maramis Regional General Hospital, North Minahasa Regency. Data analysis was carried out using univariate which explains the frequency distribution of research variables, bivariate analysis using the Spearman Rank and Chi-Square tests and multivariate analysis using the Multiple Logistic Regression test. The results of this study indicate that 130 nurses became respondents, where the average age of respondents was 31 years and most of them were female (75.4%). Using the app significantly decreased the duration of EHR documentation per hour of observation by 4.10 min ($P = 0.003$), while the time spent interacting with patient increased by 1.45 min although not significantly. Also, in the intervention period, the average duration of uninterrupted documentation episodes increased by 0.27 min ($P = 0.16$) and the uninterrupted interaction with patient increased by 8.50 min ($P = 0.027$). (Ehrler, Wu, Ducloux, & Blondon, 2021). The adoption of health technologies is occurring on an unprecedented scale, with enormous potential to improve the health of populations. In this context, information technology (IT) in nursing has emerged with a focus on quality and safety of care for the benefit of the patient. There is insufficient reliable evidence demonstrating how the integration of IT in nursing care influences methodologies for managing and organizing care in terms of structure and care practice, justifying a scoping review that synthesizes the knowledge produced so far. Online databases were used to identify papers published in 2012–2023, from which we selected nine publications that used information technology in the nursing care

processes. The participants were hospital nurses and nurse managers. The results show that the integration of IT in healthcare organizations impacts the management and organization of nursing care, and changes in structure, process reorganization, management, training, and the development of nurses' skills. To minimize this impact, the organizational structure must be prepared for a cultural change, with well-defined and communicated policies and procedures, and strong leadership. Within the teams, the importance of process reorganization, continuous training, and skill development emerges, thus enhancing the integration of IT into practice environments in conjunction with care.(Cachata, Costa, Magalhães, & Gaspar, 2024).

Literature review

Using a qualitative synthesis approach guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ), we analyzed data from a hybrid webinar (210 participants) and a four-day medical camp (600+ patients served). Thematic analysis identified four key areas: (i) factors influencing diagnostic errors, (ii) the role of laboratory and imaging services in diagnosis error prevention, (iii) existing health system interventions, and (iv) patient empowerment in the diagnostic process.(Wung, 2025). This study assessed the impact of a passive back-support exoskeleton (Laevo V2.5; Laevo, Netherlands) on trunk and hip postures, lower back muscle activity and heart rate during four common patient handling tasks: task 1, lying to sitting; task 2, sitting to standing; task 3, standing to sitting; task 4, bed-to-wheelchair transfer. Eight participants performed these tasks with and without the exoskeleton. Significant reductions (19%; $p < 0.05$) in erector spinae muscle activity were observed during tasks 2 and 4. Moreover, peak bilateral hip flexion angles decreased by up to 29° across tasks, with a notable decrease in median hip flexion angles in three tasks, except for task 3. These findings suggest that the exoskeleton may offer benefits in reducing lower back muscular strain during certain patient transfer tasks, indicating its potential utility in healthcare settings. Further research is needed to fully assess its effectiveness and practicality in improving patient-handling techniques.(Zheng, Sekhar, Alluri, Hawke, & Hwang, 2025). This study is a quantitative study with an observational research type, namely analytical using a cross-sectional study design (a cross-sectional study conducted at the Maria Walanda Maramis Regional General Hospital, North Minahasa Regency. Data analysis was carried out using univariate which explains the frequency distribution of research variables, bivariate analysis using the Spearman Rank and Chi-Square tests and multivariate analysis using the Multiple Logistic Regression test. The results of this study indicate that 130 nurses became respondents, where the average age of respondents was 31 years and most of them were female (75.4%). Using the app significantly decreased the duration of EHR documentation per hour of observation by 4.10 min ($P = 0.003$), while the time spent interacting with patient increased by 1.45 min although not significantly. Also, in the intervention period, the average duration of uninterrupted documentation episodes increased by 0.27 min ($P = 0.16$) and the uninterrupted interaction with patient increased by 8.50 min ($P = 0.027$).)(Ehrler, Wu, Ducloux, & Blondon, 2021). The adoption of health technologies is occurring on an unprecedented scale, with

enormous potential to improve the health of populations. In this context, information technology (IT) in nursing has emerged with a focus on quality and safety of care for the benefit of the patient. There is insufficient reliable evidence demonstrating how the integration of IT in nursing care influences methodologies for managing and organizing care in terms of structure and care practice, justifying a scoping review that synthesizes the knowledge produced so far. Online databases were used to identify papers published in 2012–2023, from which we selected nine publications that used information technology in the nursing care processes. The participants were hospital nurses and nurse managers. The results show that the integration of IT in healthcare organizations impacts the management and organization of nursing care, and changes in structure, process reorganization, management, training, and the development of nurses' skills. To minimize this impact, the organizational structure must be prepared for a cultural change, with well-defined and communicated policies and procedures, and strong leadership. Within the teams, the importance of process reorganization, continuous training, and skill development emerges, thus enhancing the integration of IT into practice environments in conjunction with care. (Cachata, Costa, Magalhães, & Gaspar, 2024). Clinical nursing work fails to integrate various nursing tasks such as basic care, observation of patients' conditions, medication, treatment, communication, and health guidance to provide continuous and full nursing care for patients. Based on this, this paper uses the Internet of Things (IoT) technology to optimize the infusion process and achieve closed-loop management of medications and improve the efficiency and safety of infusion and medication administration by using a rational and effective outpatient and emergency infusion and medication management system. The system was built by applying wireless network, barcode technology, RFID, infrared tube sensing, and other technologies and was combined with actual nursing work to summarize application techniques and precautions. The application of this system will become a new highlight of medical informatization, improve patient experience, monitor infusion safety, enhance nursing care, reduce emergency medical disputes, improve patient satisfaction, and will create good social and economic benefits for the hospital. (Li, Liang, & Zhou, 2021). Introducing technology to support patient care in today's complex healthcare organizations can be innovative yet challenging. Managers are often not included in technology decisions that affect their nursing units, and less often is manager insight into the project taken into consideration. Studies that describe the executive-level role and information technology are helpful but not specific to managers' perspectives. The purpose of this project was to identify the factors related to managers' perceptions about the use of mobile technology at the bedside. Mobile technology includes using smartphones for communication and documentation of patient care. Inpatient nurse managers participated in focus groups; semi-structured interview questions were administered. Nurse managers overwhelmingly indicated they should be involved in technology-related projects that affect their units. Nurse managers have a central role in supporting changes that occur with implementing technology and should be involved at the inception of the innovation. Understanding these associated complex factors is necessary to address issues and promote strategies for the successful

implementation of mobile technology. Manager inclusion has far-reaching potential as they can serve as sounding boards and conduits to nursing staff, subsequently promoting engagement and adoption of the technology.(Giannini, 2022). The costs of supporting hospitals are rising, bed numbers are falling and a growing population living longer will require more hospital visits over their lifetime. Thus there is a global focus on increasing the efficiency of patient throughput in a hospital. Bed management systems are still commonly paper-based and are effectively memory-less from the hospital point of view. The hospital information systems are typically billing and ordering systems with minimal information on patient movement along the patient pathway. The literature suggests that technology and shared information allow for shared views to model and predict usage to better manage finite resources. Paper-based systems work against this. This paper presents the design considerations for a bed management application developed in conjunction with a local private hospital. The application developed, provides a hospital-wide view of patient and bed status by recording and capturing touchpoints, that is patient-hospital interactions. Furthermore, it captures data electronically such that the data can be used for analyzing patient presentation and bed moving with a view to improve bed management and patient throughput.(Noonan, Nogales, Doyle, Broderick, & Walsh, 2023). Pakistan is a developing country under severe pressure to provide efficient and effective healthcare to its population owing to inadequate financial and human resources and limited management capabilities. This study explores the role and practice of human resource management (HRM) in three Pakistani public teaching tertiary hospitals. We interviewed leaders and managers in these hospitals to gain a better understanding of the context, challenges and opportunities for HRM. Our thematic analysis revealed that a lack of specialized human resource (HR) departments staffed by HR professionals in these hospitals negatively impacted HRM functions and practices and created confusion and complexity. This was exacerbated by centralized decision-making at the provincial level and limited managerial autonomy over key HR issues. However, despite the enormous challenges facing the Pakistani public healthcare sector the informants believed that HR could play a significant role in influencing employees' attitudes and behaviors to provide quality healthcare to more patients.(Faisal, Stanton, & Muchiri, 2023). A qualitative exploratory research (phenomenology) design was used. Twenty-five participants identified through purposive sampling contributed to the study. The data analysis was conducted using Navigo 12 Plus. We generated six major themes. Reporting was accomplished according to the consolidated criteria for reporting qualitative research checklist.(Abbas, Zakar, Fischer, & Gilani, 2022). This study's data were collected from 394 doctors working in public hospitals in Pakistan, using survey-based questionnaires and stratified random sampling technique. For data analysis, structural equation modelling was utilized to investigate the direct and indirect associations among the variables, while Statistical Software for the Social Sciences (SPSS) was used for data management. Work–life balance was found to have a positive association with employee retention and a negative association with turnover intention. Results suggest that a fair work–life balance is a significant predictor of employee

retention and turnover intention. Also, job satisfaction significantly mediated the relationship between work–life balance and employee retention and between work–life balance and turnover intention.(Aman-Ullah, Ibrahim, Aziz, & Mehmood, 2024). This study highlights the organizational-level factors that become the reason for propagating hostile behaviors among female nurses. Freire’s theory of oppression has been used as an underpinning theory for developing the conceptual framework. This study empirically verifies the conceptual framework of the study that gender discrimination and lack of administrative support are the antecedents of person-related hostility, which is the reason for poor job performance in the healthcare sector. We applied a quantitative research approach, using questionnaires to collect data. Total of 707 survey forms were collected from female nurses working in public sector hospitals in four main cities of Pakistan. The software SPSS 20 and Smarts 3 were used for the final data analysis. All hypotheses regarding the direct and indirect relationship of variables were accepted. Gender discrimination and lack of administrative support were positively associated with person-related hostility. Moreover, person-related hostility also mediated the relationship between independent variables (gender discrimination, lack of administrative support) and dependent variable (poor job performance). Future research is directed to study person-related hostility among nursing staff of semi-urban areas and small towns with low literacy rates, considering other dependent variables like burnout, mental well-being, and mental health. HR strategies and policies for fair performance evaluation and timely promotions of nursing professionals are proposed in the study for building an overall healthy environment.(Noor, Rehman, Ahmed, Sarmad, & Mehmood, 2023). Healthcare waste management is considered one of the biggest challenges that the world is going to face in the future. This threat is becoming reality owing to the worldwide sharp rise in healthcare waste generation particularly during the current COVID-19 pandemic. Like many other environmental crises, hospital plastic waste management is an area that got very little attention despite being highlighted in the literature, local media, as well as in international electronic and print media. This mini-review was conducted to assess the overall prevailing situation regarding hospital plastic waste management in Pakistan. Several illegal and unethical activities have been observed regarding hospital plastic waste management in Pakistan which includes unhygienic recycling, repacking of used hospital plastic items, open dumping on land, and disposal of hospital plastic waste in the ocean. To improve these conditions, suggestions have been made regarding the better management of hospital plastic waste.(Gill, Khurshid, Abid, & Ijaz, 2022). This mini-review was conducted to assess the overall prevailing situation regarding hospital plastic waste management in Pakistan. Several illegal and unethical activities have been observed regarding hospital plastic waste management in Pakistan which includes unhygienic recycling, repacking of used hospital plastic items, open dumping on land, and disposal of hospital plastic waste in the ocean. To improve these conditions, suggestions have been made regarding the better management of hospital plastic waste.(Bibi, Naz, & Ali, 2023). A book was published regarding hospital management information system guidelines for nursing and doctors to create the paper less work.(McGonigle &

Mastrian, 2024). Aims: This article aims to perform a Systematic Literature Review (SLR) to better understand the structures of different methods, techniques, models, methodologies, and technologies related to provenance data management in health information systems (HISs). The SLR developed here seeks to answer the questions that contribute to describing the results. Method: An SLR was performed on six databases using a search string. The backward and forward snowballing technique was also used. Eligible studies were all articles in English that presented on the use of different methods, techniques, models, methodologies, and technologies related to provenance data management in HISs. The quality of the included articles was assessed to obtain a better connection to the topic studied. Results: Of the 239 studies retrieved, 14 met the inclusion criteria described in this SLR. In order to complement the retrieved studies, 3 studies were included using the backward and forward snowballing technique, totaling 17 studies dedicated to the construction of this research. Most of the selected studies were published as conference papers, which is common when involving computer science in HISs (Sembay, de Macedo, Júnior, Braga, & Sarasa-Cabezuelo, 2023).

Discussion

This study's data were collected from 394 doctors working in public hospitals in Pakistan, using survey-based questionnaires and stratified random sampling technique. For data analysis, structural equation modelling was utilized to investigate the direct and indirect associations among the variables, while Statistical Software for the Social Sciences (SPSS) was used for data management. Work–life balance was found to have a positive association with employee retention and a negative association with turnover intention. Results suggest that a fair work–life balance is a significant predictor of employee retention and turnover intention. Also, job satisfaction significantly mediated the relationship between work–life balance and employee retention and between work–life balance and turnover intention. (Aman-Ullah, Ibrahim, Aziz, & Mehmood, 2024). This study highlights the organizational-level factors that become the reason for propagating hostile behaviors among female nurses. Freire's theory of oppression has been used as an underpinning theory for developing the conceptual framework. This study empirically verifies the conceptual framework of the study that gender discrimination and lack of administrative support are the antecedents of person-related hostility, which is the reason for poor job performance in the healthcare sector. We applied a quantitative research approach, using questionnaires to collect data. Total of 707 survey forms were collected from female nurses working in public sector hospitals in four main cities of Pakistan. The software SPSS 20 and Smarts 3 were used for the final data analysis. All hypotheses regarding the direct and indirect relationship of variables were accepted. Gender discrimination and lack of administrative support were positively associated with person-related hostility. Moreover, person-related hostility also mediated the relationship between independent variables (gender discrimination, lack of administrative support) and dependent variable (poor job performance). Future research is directed to study person-related hostility among nursing staff of semi-urban areas and small towns with

low literacy rates, considering other dependent variables like burnout, mental well-being, and mental health. HR strategies and policies for fair performance evaluation and timely promotions of nursing professionals are proposed in the study for building an overall healthy environment.(Noor, Rehman, Ahmed, Sarmad, & Mehmood, 2023). Healthcare waste management is considered one of the biggest challenges that the world is going to face in the future. This threat is becoming reality owing to the worldwide sharp rise in healthcare waste generation particularly during the current COVID-19 pandemic. Like many other environmental crises, hospital plastic waste management is an area that got very little attention despite being highlighted in the literature, local media, as well as in international electronic and print media. This mini-review was conducted to assess the overall prevailing situation regarding hospital plastic waste management in Pakistan. Several illegal and unethical activities have been observed regarding hospital plastic waste management in Pakistan which includes unhygienic recycling, repacking of used hospital plastic items, open dumping on land, and disposal of hospital plastic waste in the ocean. To improve these conditions, suggestions have been made regarding the better management of hospital plastic waste.(Gill, Khurshid, Abid, & Ijaz, 2022). This mini-review was conducted to assess the overall prevailing situation regarding hospital plastic waste management in Pakistan. Several illegal and unethical activities have been observed regarding hospital plastic waste management in Pakistan which includes unhygienic recycling, repacking of used hospital plastic items, open dumping on land, and disposal of hospital plastic waste in the ocean. To improve these conditions, suggestions have been made regarding the better management of hospital plastic waste.(Bibi, Naz, & Ali, 2023). A book was published regarding hospital management information system guidelines for nursing and doctors to create the paper less work.(McGonigle & Mastrian, 2024). Aims: This article aims to perform a Systematic Literature Review (SLR) to better understand the structures of different methods, techniques, models, methodologies, and technologies related to provenance data management in health information systems (HISs). The SLR developed here seeks to answer the questions that contribute to describing the results. Method: An SLR was performed on six databases using a search string. The backward and forward snowballing technique was also used. Eligible studies were all articles in English that presented on the use of different methods, techniques, models, methodologies, and technologies related to provenance data management in HISs. The quality of the included articles was assessed to obtain a better connection to the topic studied. Results: Of the 239 studies retrieved, 14 met the inclusion criteria described in this SLR. In order to complement the retrieved studies, 3 studies were included using the backward and forward snowballing technique, totaling 17 studies dedicated to the construction of this research. Most of the selected studies were published as conference papers, which is common when involving computer science in HISs (Sembay, de Macedo, Júnior, Braga, & Sarasa-Cabezuelo, 2023). We want to acknowledged to all authors of the research those are utilized in this literature review to understand the Utilizing HMIS hospital management information system in nursing and knowledge of nursing regarding this technology. According to this comprehensive review nurses are aware

regrading HMIS hospital management information system regardless of whether they are working in any unit of health care. Entire researchers of these literature review updated the hospital management information system. but somewhere nurses are facing challenges in utilizing hospital management information system due to load shading, lack of internet access and lac of training sessions. In this new renovation every nurse should be expert in documentation on HMIS hospital management information system. Hospital administration is responsible for training of staff regarding HMIS. It should be implemented in all hospitals. It prevents from loss or damage of data. This technology saves the health record for lifetime.

Conclusion

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Recommendations

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