Nursing Officers Attitudes Toward the implementation of Hospital Health Information Management System in Hospitals in Kalmunai RDHS

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Abstract

Background: Transition from paper-based health record systems to comprehensive electronic Hospital Health Information Management System is viewed as a means to improve both the quality of patient care and professional factors related to end-users.

Objective: To Evaluate the attitudes and concerns towards implementation of electronic record system among Nursing Officers.

Methods: A cross sectional study was conducted at RDHS Kalmunai among 95 nursing officers attached to four Base hospitals from October to November 2023. A pretested self-administered questionnaire was used to collect data related to demography and attitudes of nursing officers. Study analysis was performed using mean and percentages, Mann-Whitney U test and Spearman's test.

Results: 70.5% of the nurses were female and 47.8% of them were >39 years old. All had previous computer exposure and 67.45% of them had 1-2 years electronic system experience. Nurses attitude towards electronic health record system was positive (mean score 62.28, SD=8.79). Majority of nurses agreed that computer has allowed them to become more efficient (73.5%) and reduced paper-based work (54.3%). They disagreed that computer has caused them to decrease interdepartmental communication (58.8%).

Nurses perceived that computer usage may cause more legal implications (74.9%), increased healthcare cost (65.2%), increased waiting time of patient and caused less satisfaction to patients (60.8%) and more work load (54.3%). No statistical significant co relation between nurses attitude score and demographic variables (p=> 0.05).

Conclusions: Nurses exhibited a positive disposition towards computer-based documentation. As it was an implementing stage frequent awareness programmes might prevent potential misunderstandings and enhance adoptability. Additionally, continuous refresher training program could be suggested to improve speed and proficiency.

Keywords: HHIMS, Hospital, nurses attitude, electronic health record

Introduction

The healthcare sector is undergoing a transformative shift with the widespread adoption of Electronic Health Records (EHRs), evident in a 2021 Organization for Economic Co-operation and Development (OECD) survey of 27 countries [1]. This digital transition, driven by advancements in technology, is enhancing efficiency across healthcare processes [2]. EHR systems, currently at the forefront of implementation, digitally capture, store, and utilize patient information for more effective healthcare delivery [3]. EHRs facilitate data-driven clinical decision-

making, contributing to enhanced healthcare quality [4].

Responding to the global trend of integrating Information and Communication Technology (ICT) into healthcare, Sri Lanka, with collaboration between the Information and Communication Technology Agency (ICTA) and the Ministry of Health, initiated the "Digital Health Project." Its goal is to elevate EHR coverage in selected hospitals to 80% of total government health sector patients.

The cornerstone of this project is the "Hospital Health Information Management System" (HHIMS), a free and open-source software solution (FOSS) developed by the ICTA of Sri Lanka in 2010. HHIMS encompasses a comprehensive array of modules, including Electronic Medical Records, Patient Admission, Appointment and Queue Management, Clinic Management, Laboratory Information System (LIS), Pharmacy Stock Management, OPD Management, Ward Management, and Picture Archiving and Communication System (PACS). The implementation of the HHIMS began in 2011 and expanded to 300 hospitals by 2017 [5]. The project was implemented at RDHS Kalmunai in 2017, and gradually extended to all four base hospitals in the region by 2022.

Transitioning to electronic health records aims to enhance patient care and factors affecting end-users. Considering the role of nursing officers (NOs) in healthcare institutes, the understanding of their perspectives on computerization is vital for successful implementation. Factors influencing acceptance and resistance must be grasped for the system's effective implementation, impacting job satisfaction, workload, skill development, personal responsibility, collaboration, and career trajectories.

NOs may face challenges in the effective implementation of HHIMS due to insufficient familiarity and training [6]. Potential resistance to technological change may hinder smooth adoption, when concerns about workflow, workload, and patient care responsibilities arise. Communication gaps between NOs and stakeholders could lead to misunderstandings, impacting their attitudes toward HHIMS. If NOs perceive a lack of tangible benefits or fail to appreciate its potential advantages in patient care and hospital management, their support for the system may hindered. Addressing these challenges is crucial for successful HHIMS integration in hospital settings.

Gaining insights into the key factors from the perspective of NOs is important, not only to prevent potential resistance but also to ensure successful integration of the innovative HHIMS.

General Objective:

To Evaluate the attitudes and concerns towards implementation of electronic record system among Nursing Officers.

Methodology

A descriptive cross-sectional study was conducted among NOs who were directly handling HHIMS in all four base hospitals in Kalmunai RDHS.

'Nurses' Attitudes toward Computerization (NATC) Questionnaire' was used as the study instrument [6,7,8]. The questionnaire has two sections. The first section encompassed demographic details, duration of HHIMS interaction, prior

computer experience, and departmental service.

The second section comprised twenty Likert scale statements, which has a 5-point scale, representing five domains: benefit to the institution, patient care issues, superior capabilities of computers, willingness to use computers, and legal issues in computer use.

Data were analysed using the Statistical Package of Social Sciences (SPSS) version 25. The participants' attitudes were described by frequency analysis to view the percentage of positive versus negative attitudes toward using the HHIMS. Descriptive statistics were applied to describe the study's sample. Mann-Whitney U test and spearmen's rho test were used to examine the relationships between nurses' attitudes and demographic factors.

Results

A total of 92 NOs were recruited from 04 Base Hospital for the study. The majority of participants were females (70.5%), age > 39 (47.8%) and had work experience in the department more than 10 years (52.1%). All had previous computer experience, while majority (67.4%) had HHIMS experience for 1-2 years (Table1).

Nurses' attitudes toward using HHIMS according to the author's scoring guidelines, nurses' overall attitudes toward using computers were positive.

When analysing the mean scores for each item of the questionnaire, findings revealed that 58.6 % of NOs did not agree with the statement "Computers cause a decrease in communication between hospital departments", majority of NOs disagree with the statement 'Computers should only

be used in the financial department'' (76.6%) and 54.3% of NOs agreed that paperwork for nurses has been greatly reduced by the use of computers. They also agreed computers allow the nursing staff to become more efficient (73.5 %).

Table 1: Demographic characteristic of participant (n=92)

Variables	Frequency	%
Gender		
Male	27	29.5
Female	65	70.5
Age (years)		
< 30	3	03.4
30-34	35	38.0
35-39	10	10.8
>39	44	47.8
Service experience in the department (Years)		
<5	16	17.4
5-10	28	30.5
>10	48	52.1
Previous computer experience		
Yes	92	100
No	0	
Period of dealing with HHIMS (Years)		
<1	10	10.9
1-2	62	67.4
>2	20	21.7

Six statements out of twenty were perceived negatively by majority of NOs. Six statements were: "Part of the increase in costs of health care is because of computers" (65.2%), "Only one person at a time can use a computer terminal; therefore, staff efficiency is inhibited" (54.3%), "Computer increase the NOs work load" (54.3%), "Orientation for new employees takes longer because of computers and, therefore, unnecessary work delays occur" (54.3 %), "Because of computers, nurses will face more lawsuits" (74.9 %) and "Data entry in the computer

Table 2: Description of study variable -Attitude statements

No	Description of variable items	Strongly agree (%)	Agree (%)	Uncertain (%)	Disagree (%)	Strongly disagree (%)	Mean
01	A computer increases costs by Increasing the nurses' workload.	18.5	16.3	1.2	27.6	36.4	3.47
02	Computers cause a decrease in communication between hospital departments	6.52	17.39	17.39	26.0	32.6	3.60
03	Computers will allow the nurse more time for the professional tasks for which he/she is trained.	13.0	52.1	2.2	17.5	15.2	3.58
04	Part of the increase in costs of health care is because of computers	39.1	26.2	3.2	17.2	14.3	2.5
05	The time spent using a computer is out of proportion to the benefits	13.6	15.2	8.5	26.3	36.3	3.56
06	Computers represent a violation of patient privacy	6.52	21.02	19.2	27.17	26.5	3.45
07	Only one person at a time can use a computer terminal; therefore, staff efficiency is inhibited	23.9	30.4	10.8	22.8	12.07	2.7
08	Computerization of nursing data offers nurses a remarkable opportunity to improve patient care.	34.7	19.5	10.5	29.3	5.1	3.55
09	Computers cause nurses to give less time to quality patient care	10.8	18.4	9.7	27.2	33.8	3.55
10	Computers should only be used in the financial department.	3.4	17.4	2.6	41.4	35.2	3.87
11	Computer increase the NOs work load	34.7	19.6	6.2	3.7	33.1	2.81
12	Paperwork for nurses has been greatly reduced by the use of computers	56.2	18.4	4.6	13.6	7.2	4.08
13	Orientation for new employees takes longer because of computers and, therefore, unnecessary work delays occur	31.52	26.2	8.6	7.2	26.4	2.71
14	Data entered in the computer are not useful for nursing care	9.9	10.8	10.8	45.6	22.8	3.6
15	Computers save steps and allow the nursing staff to become more efficient.	56.2	17.3	00	18.4	8.02	4.13
16	The more computers in an institution, the less the number of jobs for employees.	23.9	39.2	00	19.5	17.39	3.32
17	Because of computers, nurses will face more lawsuits.	57.6	17.3	8.4	4.2	11.95	1.96
18	Date entry in the computer increases waiting time of patients and cause less satisfaction	39.1	21.7	4.9	13.0	21.2	2.6
19	If I had my way, nurses would never have to use computers.	23.5	19.5	4.8	22.8	29.3	3.14
20	Computer usage increases NOs professional skills	36.9	10.6	8.6	8.6	32.6	3.10

increases waiting time of patients and cause less satisfaction" (60.8%).

The analysis of the Mann-Whitney U test revealed no significant differences between males and females or nurses with and without previous computer skills experience in relation to their attitudes toward HHIMS; p values were (0.08 and 0.17 respectively). Spearman's rho correlation analysis was enrolled to determine the relationships between age, service in the department and period dealing with HHIMS and the total attitude scores. The findings revealed that there were no statistically significant correlations between nurses' attitude scores and age, service in the department and period dealing with HHIMS. The results of spearmen's rho test were (r = − 0.053, p = 0.202; r = - 0.033, p = 0.294; r = - 0.145, p = 0.052 respectively).

Discussion

Examining nurses' perspectives on HHIMS is vital for healthcare facilities. A thorough assessment of nurses' attitudes and influencing factors can inform the development of strategies to encourage those less willing to adopt the new electronic documentation system [9].

Consistent with prior research [7, 10, 11], this study's results also revealed a generally positive attitude among nurses toward computerization, as indicated by a high mean score. Additionally, 50.2% of NOs disagreed with the statement, "If I had my way, nurses would never have to use computers".

Like the findings in Yontz et al. (2015) and Salameh et al. (2019) studies, this current investigation similarly discovered no association between age and the willingness to embrace computerization.

This contrasts with the outcomes of Laramee et al. (2012) [12] study, where younger nurses showed more openness to EHR than their older counterparts, potentially attributed to their greater familiarity with technology and computers.

Further, current study showed gender did not influence attitude toward EHR acceptance. Some similar studies found that female nurses held more positive attitudes toward computerization [13, 14]. Compare to the study findings of Mathew et al. (2014) and Yontz et al. (2015) current study findings also revealed that there was no significant relationship between service in the department and attitudes toward computers usage for HHIMS. This finding indicated paper-based documentation system had a burden to all NOs. This was also supported by NOs agreement with computer usage would cause reduction in the paper work.

Despite the initial high costs associated with acquiring computers and software, the Health Ministry of Sri Lanka suggests that in the long term, healthcare expenses are anticipated to decrease [5]. During the initial implementation phase, nurses were in a learning stage, which might result in prolonged data entry and increased patient waiting time. However, as nurses gain experience, their efficiency was expected to improve, leading to faster performance. Though there were no legal concerns for nurses regarding the use of HHIMS, their misunderstanding caused the negative attitude.

Conclusion and Recommendation

The primary objective of this study was to assess nurses' attitudes towards computerized documentation. Irrespective of factors such as gender, age, work experience, computer proficiency, and

familiarity with the implementation of HHIMS, nurses generally exhibited a positive disposition towards computer-based documentation.

To address any potential misunderstandings, an awareness program is recommended for nurses to enhance their adoption of the system. Additionally, frequent refresher training programs are suggested to enhance speed and proficiency. Nursing administrators should be involved from the planning phase to the final implementation of HHIMS.

It's crucial to note that the study exclusively focused on nurses. To gain a comprehensive understanding, it is recommended to explore the attitudes of other healthcare professionals who may have similar or divergent levels of acceptance towards computerized documentation.

Reference

1. Progress on implementing and using electronic health record systems, Developments in OECD countries as of 2021, OECD health working papers, September,2023

2. Chakraborty S, Bhatt V, Chakravorty T. Impact of Digital technology adoption on care service orchestration, agility, and responsiveness. Int J Sci Technol Res (New Delhi) 2020;9:4581–6

3. Kutney-Lee A, Sloane DM, Bowles KH, et al. Electronic health record adoption and nurse reports of usability and quality of care: the role of work environment. Appl Clin Inform 2019;10:129–39.

4. Muhaise H, Kareyo DM, Muwanga-Zake P. Factors influencing the adoption of electronic health record systems in developing countries: A case of Uganda. ASRJETS 2019;61:160–6

5. Digital Health in Sri Lanka 1998-2017, Health Informatics Society of Sri Lanka, http://www.hissl.lk,info@hissl.lk

6. Stronge JH, Brodt A. Assessment of nurses' attitudes toward computerization. Comput Nurs 1985;3(4):154–8.

7. Salameh B, Eddy L, Batran A, Hijaz A, Jaser S. Nurses' attitudes toward the use of an electronic health information system in a developing country, 5. SAGE Open Nurs; 2019, 237796081984371. https://doi.org/10.1177/2377960819843711

8. Stockton AH, Verhey MP. A psychometric examination of the Stronge Brodt nurses'attitudes toward computers questionnaire. Compute Nurs 1995;13(3):109–13.

9. Ifinedo P. The moderating effects of demographic and individual characteristics on nurses' acceptance of information systems: a canadian study. Int J Med Inf 2016; 87:27–35. https://doi.org/10.1016/j.ijmedinf.2015.12.012.

10. Kaya, N. (2011). Factors affecting nurses' attitudes toward computers in healthcare. Computers, Informatics, Nursing, 29, 121–129.

11. Yontz, L. S., Zinn, J. L., & Schumacher, E. J. (2015). Perioperative nurses' attitudes toward the electronic health record. Journal of PeriAnesthesia Nursing, 30(1), 23–32. doi:10.1016/j.jopan.2014.01.007

12. Laramee, A. S., Bosek, M., Shaner-Mcrae, H., & PowersPhaneuf, T. (2012). A comparison of nurse attitudes before implementation and 6 and 18 months after implementation of an electronic health record. Computers, Informatics, Nursing, 30, 521–530.

13. Mathew, K. K., Lucy, W. K., Ann, K. K., & Margaret, M. M. (2014). Attitudes of nursing staff towards computierisation: A case of two hospitals in Nairobi, Kenya. BMC, 14, 1472–6947

14. Stokowski, L. A. (2013). Electronic nursing documentation: Charting new territory. Medscape. Retrieved from http:// www.medscape.com/viewarticle/8105 73_2.