



**Original Article:**

**Awareness and Perception of Nurses Towards E – Health Records: A Hospital Study**

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**Abstract:** As a part of pre-implementation of Electronic Health Record (EHR) as communicating tool, the study aims at investigating the awareness, perception, and usability of EHR among nurses working in 2032 bedded hospital in southern India. A cross sectional descriptive study with convenient sampling method of 296 nurses was used. The validated questionnaire contained questions related to perception of the nurses about the existing system of record keeping and their effect on patient care; Usefulness of EMR for their practice; relative important of features of EMR; acceptance level and training needs. For analysis SPSS 10.0 version was used. The results of this study are promising in terms of nurses' views for adoption of EHR. Also, suggests, nurses are beginning to perceive benefits in areas of quality in decision making; patient care and practice; enhance timely access to medical records; efficiency; productivity. Strategies are needed for improving the EHR knowledge among nurses who have a negative perception of and attitude towards it.

**Key Words:** Electronic Medical Records; Nurses; Awareness; Perception; Usefulness; Implementation

**Introduction:**

The patient medical record is a document and repository of pertinent information for management and care of the patient. The conventional paper-based health record has been in existence for several centuries and is commonly used in hospitals in India. (1) Paper-based health records have many limitations. These health records frequently contain inefficiencies such as illegible handwriting and missing information, as well as unorganized and inaccessible documentation, which may cause difficulty in assuring quality of care. (2) Paper-based health records do not facilitate communication and coordination between the various departments of a hospital in real time. (3) The health record has been used for more than a century as a tool to assist clinicians in the care of patients. Today, the health record has a comprehensive purpose: "to recall observations, to inform others, to instruct students, to gain knowledge, to monitor performance, and to justify interventions". (4)

In the past two decades, there is a tremendous advance in the field of Information Technology (IT) specifically in healthcare as well as healthcare management sectors in India. Studies have repeatedly shown that "practicing medicine on paper leads to mistakes and poor care". (5) Advances in electronic health record (EHR) technology have made it possible for the EHR to replace many functions of the traditional paper chart, and use of EHR systems promises significant advances in patient care and may be perceived as key differentiators towards the realization of modern e-health environments. (6) Today, Indian hospitals are facing several challenges in implementing of EHR like – transition costs of paper based medical records to electronic form, integration with the workflow, clinician's usability, nurses' usability, interface with rest of the system, interface with devices, down time management etc. These challenges need to be overcome by a planned and effective implementation. (8) EHR enhances patient safety, quality, reimbursement, and practice efficiency. (9)

Nurses play the most critical role in documenting the totality of patients' care due to nurses' on-going presence with hospitalized patients. (5) The extent to which nurses move to a paperless system is dependent on their beliefs about IS. (10) However, studies of EHR-based documentation effects have yielded mixed results. (5) While some have found that the use of an EMR resulted in "more complete" and "more understandable" documentation when compared with paper-based records, others have noted that EHR based documentation may promote the completion of such information-intensive tasks at the expense of patient communication. (6) In many countries like America, Australia, Europe there are government involvements and regulations that encompasses their implementation and operation. (7) Government of India intends to introduce a uniform system for maintenance of Electronic Medical Records/ Electronic Health Records (EMR/EHR) by the Hospitals and healthcare providers in the country. In the year 2013, 'Electronic Health Record Standards for India' have been finalized and approved by the Ministry of Health and Family Welfare, Government of India. EMR standards for

India are put up in the national health portal. (11) Circular for implementation of EMR in India is sent to all healthcare providers, medical professionals, and other stakeholders for adoption of implementation in healthcare institutions across the country and copy of the circular is placed in the national health portal in public interest.

**Aim of the study**

As a part of implementation of EHR, the study aims at investigating the awareness, perception, and usability of EHR by nurses of a tertiary care hospital in Southern India.

**Methods**

**Study setting**

Kasturba Hospital is a Tertiary hospital serving people in and around the district of Udupi, India. Kasturba Hospital, Manipal began as a 150 bedded Hospital in 1961. Medical Records Department eventually came in 1965. Currently it is grown to 2032 bedded multispecialty hospital. The daily average number of New Outpatient Registrations per day is 468; Repeat Registrations per day 1582; daily Inpatient admissions are 249 (average). With this significant number of patients, these many records from and to the Medical Record Department (MRD) utilizes huge amount of human and financial resources that is of one of the major concerns of administration. Despite of above problems been faced for a long time there is no Information technology coming in, in spite of the availability of many efficient Electronic medical records systems.

**Study type**

This is a cross sectional and all nurses willing to participate were recruited into the study. Final sample size is 296 nurses.

**Data collecting tool**

A Structured validated questionnaire including socio-demographic details was prepared and distributed among the nurses who were willing to participate in the study. The questionnaire contained the sections to know the Perception of the nurses about the existing system of record keeping and their effect on patient care; Perception of Usefulness of EMR among Nurses for their practice; relative importance of features of EMR; acceptance level and their training needs. Data were analyzed in percentiles and for significance test (x2) SPSS 10.0 version was used.

**Result**

*Respondents' profile*

In total of 296 samples 48% (142) were from the age group of 20 to 24; 20.3% (60) from age group of 25 to 29; 6.4% (19) from 30 to 34 and 25.3% (75) from age group of 35 and above. Most of nurses 44.3% had 1 to 5 years of working experience in the current setting.

*Perception of the nurses about the existing system of record keeping and their effect on patient care*

Table 1 describes the results of perception of nurses about the existing system of record keeping and their effect on patient care. Majority of nurses perceived that the current system of paper medical record displays of complete patient demographics (77%); structured patient data(76%); patient specific considerations (78%); complete retrieval of documents (66%); easy for storage and retrieval (66%); Easy to maintain confidentiality of patient information (73%); Fulfills the Legal Aspect of the Patient's Records (83%); Multiple form types making documentation tedious (66%); Delay in service delivery because of dispersion of records (67%); Difficult to understand doctors' handwriting (63%).

**Table 1: Perceptions of Nurses about the current system of Paper Medical Records**

Q. No.	Questions	Yes	No	No Response	'p'
1	Display of complete patient demographics	227 (77%)	69 (23%)	0%	.001**
2	Display of structured patient data	224 (76%)	69 (23%)	3 (1%)	.001**
3	Display of patient specific considerations	230 (78%)	63 (21%)	3 (1%)	.001**
4	Complete retrieval of documents	196 (66%)	89 (30%)	11 (4%)	.001**
5	Frequent loss of records	74 (25%)	219 (74%)	3 (1%)	.001**
6	Ability of the patient to give history in case of loss of records	136 (46%)	157 (53%)	3 (1%)	.181
7	Multiple form types making documentation tedious	196 (66%)	86 (29%)	14 (5%)	.001**
8	Delay in service delivery because of dispersion of records	198 (67%)	95 (32%)	3 (1%)	.001**
9	Manual records are easy for storage and retrieval	196 (66%)	89 (30%)	11 (4%)	.001**
10	Difficult to understand doctors' handwriting	186 (63%)	110 (37%)	0%	.001**
11	Easy to maintain confidentiality of patient information	216 (73%)	74 (25%)	6 (2%)	.001**
12	Fulfills the Legal Aspect of the Patient's Records	246 (83%)	41 (14%)	9 (3%)	.001**

\*\* highly significant

Majority of the nurses responded "no" to frequent loss of records (74%) and ability of the patient to give history in case of loss of records (53%). Test for significance showed all the results as significant except for question six where 46% nurses opined that patient can give history in case of loss of records. Test for significance showed all the results as highly significant.

*5.3 Perceptions of usefulness of EMR for nursing practice*

Table 2 describes the results of Perception of Usefulness of EMR among Nurses for their practice. Majority of nurses perceived of timely access to medical Records (75%); improved quality of decision making (69%); improved quality of patient care (80%); improved quality of practice (77%); improved efficiency and productivity (67%); reduce medication error (62%); better communication with other Health care providers (81%). Test for significance showed all the results as highly significant.

**Table 2: The Perception of Usefulness of EMR among Nurses for their practice**

Q .No.	Questions	Yes	No	No response	'p'
1	Timely access to medical Records	222 (75%)	65 (22%)	9 (3%)	.001**
2	Improved quality of decision making	204(69%)	86 (29%)	6 (2%)	.001**
3	Improved quality of patient care	237(80%)	59 (20%)	0%	.001**
4	Improved quality of practice	227 (77%)	69 (23%)	0%	.001**
5	Improved efficiency and productivity	198 (67%)	89 (30%)	9 (3%)	.001**
6	EMR usage can reduce Medication error	184 (62%)	112 (38%)	0%	.001**
7	Better communication with other Health care providers	240 (81%)	50 (17%)	6 (2%)	.001**

\*\* highly significant

Perception of nurses about the importance of the features of EMR

**Table 3: Perception of Nurses about the relative importance of features of EMR**

Q. No.	Questions	Yes	No	No Response	'p'
1	Display of Clinical notes and reports	240 (81%)	32 (11%)	24 (8%)	.001**
2	Entry and display of Diagnosis medication and allergies	275(93%)	18(6%)	3 (1%)	.001**
3	Display of Physical findings	243(82%)	47(16%)	6 (2%)	.001**
4	Prescription writing	252(85%)	44(15%)	0%	.001**
5	Decision Support System	234(79%)	62 (21%)	0%	.001**
6	Display of structured documentation	252(85%)	35 (12%)	9 (3%)	.001**
7	Display of Demographics	227 (77%)	65 (22%)	3 (1%)	.001**
8	Display of Lab/Imaging reports	263 (89%)	27 (9%)	6 (2%)	.001**
9	Privacy of Information	222(75%)	68(23%)	6 (2%)	.001**

\*\* highly significant

Table 3 describes the results of Perception of Nurses about the relative importance of features of EMR. Majority of nurses opined EMR is useful because of its features that includes the display of Clinical notes and reports (81%); Entry and display of Diagnosis medication and allergies (93%); Display of Physical findings (82%); Prescription writing (85%); Display of structured documentation (85%); Display of Demographics (77%); Display of Lab/Imaging reports (89%); Privacy of

Information (75%) and is also a Decision Support System (79%). Test for significance showed all results as highly significant.

Acceptance of electronic health records among nurses

**Table 4: Acceptance levels of Paper and Electronic Medical Records**

Q. No.	Questions	Frequency	Percent
1	Total acceptance levels of paper records	204	69%
2	Total acceptance for electronic records	222	75%
3	Acceptance for both paper and electronic records	142	48%
4	Acceptance for only electronic records	80	27%
5	Acceptance for only paper records	62	21%

The result also showed (Table 4) that 69% are comfortable working on paper records whereas 75% perceive that that can work better on electronic records. Interestingly out of total respondents, 62 (21%) respondents said they are comfortable only on the paper records and do not want the record to be digitalized.

Training needs for EHR

**Table 5: Perception of Nurses about the training needs for EHR**

Q No.	Questions	Yes	No	No Response
1	EMR usage should be mandated	74%	11%	15%
2	Healthcare provider should devote time for training and updating the staff	82%	5%	13%

Perception of nurses about the training needs was also analyzed and the result showed (Table 5) 74% of the nurses opined that EHR usage should be mandated and suggested healthcare providers should devote time for training and updating the nursing staff.

### Discussion and Conclusion

In the current study, constructs for evaluation was draw from a validated tool and expressed in percentiles to elicit selected population's views. The results of this study are promising in terms of nurses' views for adoption of EHR and suggest that nurses are beginning to perceive benefits in areas of quality in decision making, patient care and practice. (6) They also opined that EHR enhances timely access to medical records, efficiency, productivity and reduces medical error. Most of them suggested that it acts as a better communicating tool among health care providers.

The perception regarding the importance of features of EHR plays a significant role. So, it is important to consider user's views when adopting an EHR. Majority of the nurses opined that all the features listed in the questionnaire (table III) are important for nursing service. As per the current study, majority of nurses have a perceived positive impact with respect to some key areas, except for mixed views towards the acceptability of paper-based and electronic medical records. However, strategies are needed for improving the satisfaction of nurses who have a negative perception of and attitude toward EHR systems. (12) The findings of this study have the potential to highlight areas of concern or benefit for adoption and should be considered before implementations and evaluations. Nurses' awareness and perceptions, attitudes and acceptability were generally positive. (6) This result indicates

that nurses are generally accepting of the implementation of a new EMR system. Healthcare technology to be utilized to develop EMRs that enable nurses to document detailed patient data in a swift and straight forward manner. Understanding between healthcare team and health information management professionals to assure an EHR, meets requirements. However, providers must come up with strategies for improving the satisfaction of nurses who have a negative perception and attitude toward EHR. The implementation strategy also needs to consider different requirements of other end user population.

It is recommended that the institution should plan for training the potential users before executing plans of transition of paper medical records to electronic form, as many of respondents recorded the 'no/no response' option for the perception statements. If implementing is to be successful it is important that nursing staff understand the possible beneficial effects of EHR on the quality and safety of patient care. (13) With government mandates, that healthcare care organization in India implement EMR and make Information Technology as integral part of their healthcare delivering infrastructure. EHR systems also serve as tools to improve communication and documentation and provide clinical care coordination to improve health-care outcomes. More studies on perception and acceptability of healthcarers pertaining to EHR in healthcare care settings in India needs to be taken up.

#### **Limitation of the study**

This study has several potential limitations. Questionnaire was based on researcher's assumptions as to what is important and may be missing something that is of importance. Open ended question/s could have better acknowledged the subjectivity of the issue. The study was conducted in a single private hospital, and the results cannot be generalized for all the hospitals of India.

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