

**A STUDY ON THE TRAINING NEED ASSESSEMENT AND PRE AND POST TRAINING EVALUATION OF
DOCTORS AND NURSES ON COMPUTERIZED PATIENT RECORD SYSTEM (CPRS)**

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfillment for the award of the degree of
Master of Business Administration (MBA)

in

Hospital and Health Management

by

Nikita Singh

Under the Supervision and Guidance of

Dr. Goutam Sadhu

2023

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled “A Study on the Training Need Assessment and Pre and Post Training evaluation of Doctors and Nurses on Computerized Patient Record System (CPRS)” is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)

Name of Student : Nikita Singh

Date : 17.05.2023

CERTIFICATE



BLK-MAX
Super Speciality Hospital

Dated: 29-05-2023

TO WHOMSOEVER IT MAY CONCERN

Sub: Internship Completion Letter

This is to certify that **Nikita Singh** completed Internship at BLK-Max Super Speciality Hospital from **28th February 2023 till 29th May 2023** in the Department of IT.

During her tenure, her conduct was found to be excellent. She has been very dedicated in all her assignments.

We wish her all the best for her future.

Yours Sincerely,
For Dr. B.L. Kapur Memorial Hospital,
(A Unit of Lahore Hospital Society)

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CERTIFICATE

This is to certify that dissertation titled “A Study on the Training Need Assessment and Pre and Post Training evaluation of Doctors and Nurses on Computerized Patient Record System (CPRS)” is a record of the research work undertaken by Nikita Singh in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

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IIHMR University, Jaipur

Date

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ABSTRACT

The rapid advancement of technology has transformed the healthcare sector, leading to the implementation of computerized patient record systems (CPRS) in hospitals. However, the successful integration of such systems requires adequate training and evaluation of healthcare professionals. This study aims to explore the training needs assessment and pre- and post-training evaluation of doctors and nurses in adopting CPRS in a hospital setting. The study involves a comprehensive literature review to understand the current state of research and practices in this domain, followed by a discussion on the findings and their implications for healthcare organizations. CPRS will be implemented in BLK Max Super Speciality hospital by June mid . For this purpose trainings will have to be conducted for the doctors and nurses for which A cross-sectional survey was conducted to assess the training needs and preferences of doctors and nurses on the CPRS. The objectives of the study were to-

- To identify the specific training needs and preferences of doctors and nurses for the CPRS
- To obtain a baseline data on the knowledge and skills of the participants
- To compare the baseline data (Pre training evaluation) to the post-training evaluation to assess the effectiveness of the training program
- To find gap areas in order to identify any areas where further training may be needed

It was a Mixed Research and the study was conducted in BLK-MAX Super Specialty Hospital, New Delhi. The data was collected through google forms .

MAJOR FINDINGS –

- The pre and post training evaluations have shown a significant improvement in their performance, indicating that the training programs are appropriate and effective.
- Allover after the training , majority I.e 91% trainees claimed that the training sessions helped them in attaining the appropriate skills they needed and were satisfied with the training session .

RECOMMEDATIONS –

- Continuously evaluate and improve the training program

- Provide ongoing support and resources
- Consider individual learning needs
- Foster a positive learning environment

Key Words : Computerized Patient Record System (CPRS) , Clinical Decision Support System (CDSS) , Barcoded Medication Administration (BCMA) , Hospital Information System

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Nikita Singh

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Contents

Abbreviations	13
Chapter 1 : Introduction	14
1.2 The problem being investigated :	17
1.3 Context and importance of the problem :	17
Chapter 2 : Literature review	18
2.1 Electronic Health Record Implementations and Insufficient Training Endanger Nurses' Well-being: Cross-sectional Survey Study	18
2.2 Education and Training on Electronic Medical Records (EMRs) for health care professionals and students: A Scoping Review	18
2.3 Developing an Electronic Health Record Training Program for New Employees	19
2.4 The impact of training on the use of electronic health records	20
2.5 Advanced Proficiency EHR Training: Effect on Physicians' EHR Efficiency, EHR Satisfaction and Job Satisfaction.....	20
2.6 Nurses Knowledge, Skills, and Attitude Toward Electronic Health Records (EHR).....	21
2.7 A New EHR Training Curriculum and Assessment for Pediatric Residents	22
2.8 Assessment of factors influencing nurses acceptance of electronic medical record in a Saudi Arabia hospital.....	22
2.9 Design, Implementation, and Evaluation of a User Training Program for Integrating Health Information Technology into Clinical Processes	23
2.10 Navigating Through Electronic Health Records: Survey Study on Medical Students' Perspectives in General and With Regard to a Specific Training	23
Learnings from review of literatures	24
Gaps Identified	24
Chapter 3 : Methodology	26
Chapter 4 : Results	28
Chapter 5 : Discussion.....	84
Chapter 6 : Conclusion	87
Suggestions	89
References	Error! Bookmark not defined.

List of Tables

Serial Number	Table Name	Page Number
4.0	Training Schedule	59

List of Figures

FIGURE NUMBER	FIGURE	PAGE NUMBER
4.1	Current job role	30
4.2	Proficiency with computer applications	31
4.3	Typing Ability of Respondents	32
4.4	Knowledge about EHR and EMR	33
4.5	Knowledge about CPRS	33
4.6	Knowledge about benefits of CPRS	34
4.7	Awareness of the respondents on whether CPRS will benefit delivery of care	35
4.8	Estimated time needed by respondents to gets hands on CPRS	35
4.9	Mode of training suitable for respondents	36
4.10	Whether user information manual was read	36
4.11	Awareness about role specific accessibility in CPRS	37
4.12	Awareness about VISTA ID	38
4.13	Awareness about electronic signatures	39
4.14	Awareness about functions one can perform on CPRS	40
4.15	Awareness about patient record sheets that CPRS contain	41
4.16	Awareness if order can be raised through CPRS	41
4.17	Awareness about CDSS	42
4.18	Awareness whether training on CDSS is needed	42
4.19	Awareness about the data that is mandatory to be filled in CPRS	43
4.20	Awareness on clinical reminders	43
4.21	Awareness on the orders that can be raised on CDSS	44
4.22	Awareness on whether reports can be viewed on CPRS	45
4.23	Time the respondents can take out for training purpose	46
4.24	Current understanding of respondents on CPRS	47

FIGURE NUMBER	FIGURE	PAGE NUMBER
4.25	Experience of respondents with CPRS	48
4.26	Confidence of respondents with computers	49
4.27	Knowledge about full form of CPRS	49
4.28	Knowledge about benefits of CPRS	50

4.29	Knowledge about the way in which patients can be searched	51
4.30	Awareness about the time of initial assessment	52
4.31	Awareness about filling of consent forms	53
4.32	Awareness about discontinue order functionality	54
4.33	Awareness about electronic signatures	54
4.34	Experience of the users on training	55
4.35	Feedback on length of training	55
4.36	Rating of overall quality of training	56
4.37	Awareness about advance search option of CPRS	57
4.38	Awareness about patient clinical details snapshot functionality	58
4.39	Awareness about searching of a patient	59
4.40	Awareness about new notes functionality	60
4.41	Awareness about multiple parameter graph	61
4.42	Awareness about VTE Risk Assessment	61
4.43	Feedback on whether the training helped the users	62
4.44	Training Need Assessment Questionnaire	100
4.45	Pre Training Survey Questionnaire	107
4.46	Post Training Survey Questionnaire	108

Abbreviations

BCMA - Barcoded Medication Administration

CDSS - Clinical Decision Support System

CPOE - Computerized provider order entry

CPRS - Computerized Patient Record System

HIS - Hospital Information System

Chapter 1 : Introduction

A Computerized Patient Record System (CPRS) is an electronic system that is used to manage and maintain an individual patient's health records in a hospital or healthcare facility. The system is designed to improve healthcare quality, patient safety, and reduce healthcare costs by providing a more efficient and accurate way of managing patient data.¹

Computerized Patient Record Systems (CPRS) can be used in various healthcare settings such as hospitals, clinics, private practices, and other healthcare facilities.² These systems can be used to store and manage patient health records, medications, laboratory tests, imaging studies, and other healthcare data in a digital format.³

The benefits of CPRS for a hospital and patients are numerous like improved quality of patient care , Streamlined Workflow , Better Patient Safety , Reduced Costs , improved Patient Experience Overall, a CPRS can provide numerous benefits for both hospitals and patients.⁴ By providing a more efficient, accurate, and streamlined way of managing patient data, a CPRS can improve the quality of care, enhance patient safety, and reduce healthcare costs.

A computerized patient record system, also known as an electronic health record (EHR) system, has significant importance in hospitals and healthcare settings. Here are some key significance of implementing a computerized patient record system.⁵

1. **Improved Accessibility and Availability:** With a computerized system, patient records can be accessed by authorized healthcare professionals from different departments and locations, enabling quick and seamless information sharing. This enhances coordination of care and allows healthcare providers to make informed decisions based on comprehensive patient information.
2. **Enhanced Patient Safety:** Computerized patient record systems reduce the risk of medical errors and improve patient safety. Electronic records minimize the chances of lost or misplaced files, eliminate illegible handwriting issues, and provide real-time access to critical patient data, such as allergies, medications, and lab results. This helps healthcare providers make accurate diagnoses, prescribe appropriate treatments, and avoid potential adverse events.

3. **Efficient Workflow and Time Savings:** Electronic health records streamline administrative tasks and workflows. The system can automate routine processes, such as appointment scheduling, billing, and prescription management. This saves time for healthcare professionals, allowing them to focus more on patient care and reducing administrative burdens.
4. **Comprehensive and Coordinated Care:** A computerized patient record system allows for better coordination and continuity of care. Multiple healthcare providers can access and update patient information in real-time, promoting collaboration and ensuring that all relevant parties are well-informed. This facilitates better communication, reduces duplication of tests or procedures, and leads to more comprehensive and integrated healthcare services.
5. **Data Analytics and Decision Support:** Electronic health records provide a wealth of data that can be utilized for clinical research, quality improvement initiatives, and population health management. Advanced analytics tools can analyze large datasets to identify trends, patterns, and potential risks, leading to evidence-based decision-making and improved patient outcomes.
6. **Increased Efficiency and Cost Savings:** Implementing a computerized patient record system can lead to operational efficiencies and cost savings in the long run. Reduced paperwork, streamlined workflows, and optimized resource utilization contribute to improved efficiency. Additionally, electronic records can eliminate the need for physical storage space and decrease costs associated with printing, storage, and transcription services.
7. **Regulatory Compliance and Interoperability:** Computerized patient record systems often come with features that help healthcare providers meet regulatory requirements and standards, such as HIPAA (Health Insurance Portability and Accountability Act). Furthermore, interoperability capabilities enable secure sharing of patient information across different healthcare organizations, promoting seamless transitions of care and better coordination between providers.

Overall, a computerized patient record system significantly enhances the quality of healthcare delivery, patient safety, and operational efficiency within hospitals. It empowers healthcare

professionals with comprehensive, accessible, and accurate patient information, ultimately leading to improved patient care and outcomes.⁶

For all these benefits, CPRS will be implemented in BLK Max Super Speciality hospital by June mid. For this purpose, trainings will have to be conducted for the doctors and nurses for which a cross-sectional survey will be conducted to assess the training needs and preferences of doctors and nurses on the CPRS. A pre-training evaluation will be conducted to assess the baseline knowledge and skills of the participants. Then, a customized training program will be developed and implemented for the participants. A post-training evaluation will be conducted to assess the effectiveness of the training program. CPRS can benefit the public by improving the quality of healthcare, enhancing patient safety, facilitating communication with healthcare professionals, providing access to healthcare data, increasing efficiency, and reducing healthcare costs.

The Clinical Decision Support System (CDSS) is a useful tool that can be integrated into computerized Patient Record systems (CPRS) to enhance clinical decision making. CDSS is designed to provide healthcare professionals with real-time clinical decision-making support and guidance based on evidence-based practice guidelines, data analysis, and other relevant factors. When integrated into CPRS, CDSS can help healthcare providers make better-informed decisions and improve patient outcomes.⁷ For example, CDSS can provide alerts for drug-drug interactions, drug-allergy alerts, and reminders for preventive care tasks. CDSS can also provide information on suggested care pathways based on the patient's medical history and other factors, which can be used to enable more tailored care for each patient. Using CDSS in CPRS can also help healthcare organizations to optimize processes, reduce costs, and improve patient outcomes. For example, CDSS can help reduce medication errors, prevent inappropriate drug use, and improve patient safety in general. It can also reduce the number of follow-up appointments, improve communication across healthcare teams, and improve clinical documentation.

In summary, the integration of CDSS in CPRS can provide healthcare professionals with real-time support and guidance, which leads to better-informed clinical decision-making, improved patient outcomes, and cost savings for healthcare organizations.

1.1 Purpose of research :

The main purpose of this research study is to identify whether the training provided to doctors and nurses on Computerized Patient Record System (CPRS) is effective in enhancing their skills and knowledge to effectively use the system.

1.2 The problem being investigated :

With the increased use of technology in healthcare, it has become important for medical personnel to have the skills and knowledge to use computerized systems such as CPRS. However, existing literature suggests that healthcare providers are not adequately trained to use computerized systems, which is leading to an increase in errors and a decrease in patient outcomes. Therefore, this study aims to investigate the training needs of doctors and nurses and assess the effectiveness of training programs provided to them on CPRS.

1.3 Context and importance of the problem :

Computerized Patient Record System (CPRS) is a critical component of healthcare delivery. It allows medical professionals to access patient records quickly and efficiently, enabling them to provide better care to patients. However, inadequate training of medical personnel on the use of CPRS can lead to errors, delays in patient care, and a decrease in patient outcomes. Therefore, a study on the training needs assessment and pre and post training evaluation of doctors and nurses on CPRS is essential to identify the gaps in healthcare training and improve patient outcomes. Additionally, this study can help to create recommendations for healthcare organizations to improve their training programs for medical personnel, ensuring better efficiency and improved patient care.

Chapter 2 : Literature review

The literature reviews aims to explore the training needs assessment and pre- and post-training evaluation of doctors and nurses regarding the adoption of computerized patient record systems (CPRS) in hospital settings. The review examines relevant research literature to understand the current state of knowledge, practices, and challenges in this domain. By synthesizing the existing literature, this review provides insights into effective training approaches and evaluation methods for healthcare professionals to successfully integrate CPRS into their practice.

2.1 Electronic Health Record Implementations and Insufficient Training Endanger Nurses' Well-being: Cross-sectional Survey Study

A study by the National Library of Medicine (2021) found that EHR implementations and the inadequate training associated with them may threaten nurses' safety and possibly result in mistakes. Therefore, it is crucial for organisations to provide thorough training prior to, throughout, and following installations. Additionally, user participation, re-engineering, and simple-to-use technologies that permit transition periods may be advantageous to nurses during the implementation process. In hospitals, training and other improvements would be extremely crucial. 3610 Finnish registered nurses participated in this cross-sectional survey study in the year 2020. EHR adoption was measured by determining whether each respondent's work unit had installed or would implement a new EHR (1) within the past six months, (2) within the past year, (3) in the following year, and (4) at no point in the past year or in the following year. Analyses of covariance with adjustments for age, gender, and industry of work were used to investigate the connections. EHR implementations and insufficient training related to these implementations may endanger the well-being of nurses and even lead to errors. Thus, it is extremely important for organizations to offer comprehensive training before, during, and after implementations. Moreover, easy-to-use systems that allow transition periods, a re-engineering approach, and user involvement may be beneficial to nurses in the implementation process. Training and other improvements would be especially important in hospitals.⁸

2.2 Education and Training on Electronic Medical Records (EMRs) for health care professionals and students: A Scoping Review

A research article by International Journal of Medical Informatics (2020) , says that A crucial component of EMR adoption is the creation of suitable training programmes for students and

healthcare professionals. This study provided a summary of the most recent research on EMR training. Growing interest in EMR training was evident, and the studies that were included reported a range of training techniques, participants, settings, tactics, and results. It is obvious that training needs to be in accordance with the specific training requirements, training objectives, and EMR system. The development of appropriate training programmes for students and medical professionals is a key element of EMR implementation. The most recent studies on EMR training was summarised in this publication. The studies that were included gave data on a variety of training methods, participants, venues, strategies, and outcomes, demonstrating the growing interest in EMR training. It goes without saying that training needs to be done in accordance with the unique training demands, training goals, and EMR system. In order to successfully integrate technology and continue using the EMR systems, training policies and strategies are crucial. We researched and compiled the most recent research on EMR training that is aimed at both healthcare professionals (HCP) and students in order to provide evidence-based recommendations for creating and putting into practise educational interventions and training. Training should be aligned with the particular training needs, training objectives, EMR system utilized, and organizational environment. A training plan should include an overall goal and SMART (Specific, Measurable, Achievable, Realistic, Tangible) training objectives, that would allow a more rigorous evaluation of the training outcomes.⁹

2.3 Developing an Electronic Health Record Training Program for New Employees

An article by The University of San Francisco (2016) says that Overall, feedback on the support and training programme was favourable. The EHR received positive feedback from nurses. The majority of the measures had valid physician documentation and meaningful use metrics were collected. The informatics nurse made use of resources. In order to identify the best practises to be incorporated into the training programme, a literature research was conducted to evaluate what was already accessible at the facility and to expand understanding of training and onboarding. Currently, the hospital is implementing more technologies using the tools that were built. It is possible to monitor ongoing content appropriateness assessments. Direct observation and recurrent surveys will continue to provide insightful feedback in order to maintain the relevance of training and prevent it from becoming stale. More literature and case studies will be available to provide examples of best practises, lessons learned, and ideal training delivery methods as more facilities adopt or upgrade computer systems and build training programmes.

To satisfy the demands of new clinical staff, an EHR training programme was required. Organising training sessions and acquiring access to the EHR required close departmental coordination. Success characteristics that were critical for success were tailored instruction that addressed the needs of adult learners, a socially and culturally sensitive approach, and activities that were prioritised for each job. Physicians documented accurately and meaningful use measures were recorded for the majority of the measures. During the next few years, the organization plans to implement another EHR, which will replace the current system and the nursing progress note documentation platform. When that occurs, the tools and skills developed through this project will be invaluable and reproducible. Ultimately, the staff will benefit from the ongoing training experiences and thus preferential attention can be focused on the staff learning needs rather than developing a training program for every technology upgrade.¹⁰

2.4 The impact of training on the use of electronic health records

An article by Research gate (2011) found out that most survey participants were happy with the EHR for the behavioural and attitudinal aspects, although it is unknown based on their response for the cognitive component. Perhaps making the responses necessary will allow us to better understand their precise response to this theme in our upcoming surveys. Furthermore, when compared to doctors, nurses, and office staff, medical students and residents expressed greater satisfaction with the EHR. The purpose of the current study was to evaluate the efficacy of the EHR training provided to healthcare professionals in an academic practise, to use feedback from the training evaluation to guide future training employed for healthcare providers' content and methodology, and to comprehend the effects of EHR implementation on all facets of healthcare delivery. The majority of responders also agreed with the claim that EHR increases care efficiency. Avoiding pharmaceutical errors, better adherence to health maintenance recommendations, and lower healthcare costs were a few of these advantages. It appears that the majority of our physicians had no strong opinions about preventing drug mistakes.¹¹

2.5 Advanced Proficiency EHR Training: Effect on Physicians' EHR Efficiency, EHR Satisfaction and Job Satisfaction

An article by National Library of Medicine(2012) says that Uncertainty exists on the optimal method for instructing doctors in how to use the Electronic Health Record (EHR) to its fullest potential. A variety of methods are used, including web-based training, classroom instruction,

EHR functionality training, case-based training, role-based training, process-based training, mock-clinic training, and "on the job" training. In the same way, it's still unclear when training should be given—whether it should be done extensively before going live or perhaps minimally before going live and then extensively after. The efficacy of peer trainers, clinician trainers, and non-clinician trainers is also still not completely understood. This paper outlines a programme where somewhat seasoned physician users of an EHR attended a rigorous 3-day Peer-Led EHR Advanced Proficiency Training, and it reports the outcomes of that training based on participant questionnaires. It emphasises the efficiency of existing peer trainers' proficiency. The research found out that an intense 3-day off-site physician peer-led competence training course for experienced EHR users can greatly enhance clinician work satisfaction, perceptions of organisational support for providing high-quality patient care, and self-perceived efficiency with the EHR. In this situation, clinicians already frequently seek assistance from other professionals when utilising the HER.¹²

2.6 Nurses Knowledge, Skills, and Attitude Toward Electronic Health Records (EHR)

According to an article by WaldenUniversity(2015),Simulation has developed from a teaching tool to a sophisticated technology that enables real-world interaction and context delivery in a secure, nonthreatening setting. By allowing the nurse to practise and repeat tasks as necessary to meet learning styles, simulation can be used to train nurses on an EHR system, boosting confidence and productivity. This experiment demonstrated the advantages of increased knowledge for nurses who have had little to no training in an EHR system as well as the potential success of such a programme. An agreement for mutual cooperation between employers and community colleges and/or universities to use their combined resources to advance community welfare would be advantageous. The nursing profession has been significantly impacted by technology, and nurses now need to adjust to the new style. In order to deliver successful treatment, nurses across the country will need to acquire the skill set required to work in the increasingly technology environment.The opportunity for nurses to influence systems that provide safe, effective patient care will be priceless if they get the necessary IT skills. It has been proposed that simulated training on an EHR system can help nurses feel less overwhelmed and more confident with technology, preventing resistance and failure to embrace. In a simulated setting, teaching nurses how to utilise an EHR system boosts their confidence in the abilities they need to advance and allays their fears of making mistakes and failing while using technology.

These abilities are increasingly essential to nursing practise and enable nurses to participate in the societal transformation taking place in the healthcare industry.¹³

2.7 A New EHR Training Curriculum and Assessment for Pediatric Residents

An article by Research Gate(2017) shows that Background New EHR users frequently struggle with traditional classroom-based Electronic Health Record (EHR) training. According to studies, improved training that emphasises practical application and is closely backed by clinical use is advantageous. Hence the curriculum was divided into several phases like phase 1 of expanded training, which includes live practise, demonstrations, and order set analysis. Phase 2 included skill-based assignments, role-playing, and medication entry. Phase 3 comprised supervised order entry, history-writing, and shadowing. Through a competency exam and a survey of productivity and self-efficacy, residents' EHR knowledge and attitudes were assessed and compared before and after the revised curriculum. Both the mean proficiency scores and two of the five individual proficiency scores significantly improved. Most efficiency survey results significantly improved from pre- to postintervention.¹⁴

2.8 Assessment of factors influencing nurses acceptance of electronic medical record in a Saudi Arabia hospital

An article by ScienceDirect(2018) claims that There is an astonishingly strong positive link between the traits of nurses and their acceptance of electronic medical records. The key elements that positively impacted the acceptance of TAM characteristics and, consequently, the EMR user acceptance were gender, age, education level, years of experience in nursing practise, years of time in the organisation, length of computer usage, and whether they had formal computer training. These results are comparable with earlier research in the field that looked at the clinicians' acceptance of EMR. Also the research found out that that when it came to the acceptability of EMR, nurses had a favourable attitude regarding perceived utility and ease of use. EMR use within a healthcare facility aids in guaranteeing the effectiveness of clinical care and patient safety. When it comes to storing exact and accurate information about patients, such as important medical information and life-saving word of warnings relating to a particular health issue, electronic medical records (EMRs) are unquestionably a benefit over paper-based records. Furthermore, the healthcare institutions would be able to improve the quality of care and significantly assist patients, especially those with serious health issues, through the integration of EMR technology and structured record systems with the physicians' work.¹⁵

2.9 Design, Implementation, and Evaluation of a User Training Program for Integrating Health Information Technology into Clinical Processes

An article by University of Massachusetts Amherst(2016) says that both training programmes were successful, as evidenced by the fact that it increased trainees' system usage competences before and after training, as determined by their capacity to enter drugs into the system, for both the treatment and control groups. the majority of students were capable of moving the competency to a different system. It is challenging to determine which training method helped trainees learn and apply new information because this programme used the so-called "blended training" approach and included a variety of techniques, including active training, instructor-led demonstration, error management training, simulation-based training, and part-task training.

Before being put into use, a training programme should be rigorously tested and updated, following a set of procedures. By offering practise and feedback, connecting new knowledge to previously taught ones, and providing practise, training techniques should be created to facilitate knowledge acquisition and transfer. The use of cognitive mapping to enhance health IT training might be successful. Health IT can be included into processes using flowchart mapping, and a system's structure can be represented using hierarchy mapping.¹⁶

2.10 Navigating Through Electronic Health Records: Survey Study on Medical Students' Perspectives in General and With Regard to a Specific Training

An article by JMIR Publication(2019) states that students were able to gain new knowledge and a greater understanding of the hazards and difficulties associated with using an EHR system thanks to a specific simulation training. Overall, the new training module was well received by the students, who also backed the addition of EHR instruction to the medical curriculum. To make the most of the long-term feedback opportunities a simulated system provides and to optimise training modules, more research is required as Students gave EHR training for medical knowledge much higher ratings after the lesson than they had before (mean 3.74, SD 1.05). However, they also questioned if EHRs would continue to benefit multidisciplinary cooperation after training (mean 1.96, SD 0.65). Students who received specialised training using simulation software were evaluated as being more prepared (88/102, 86.2%), however they did not feel secure in all EHR-related situations. For this study The University of Tübingen's fifth-year medical students (N=104) participated in a standardised two-day training session about the benefits and hazards of using electronic health records. Following the instruction, students

entered their own EHR data on fictitious patient situations in a controlled practise setting. Additionally, standardised and open-ended questionnaires were given to students to gauge their experiences with a new teaching module and an EHR simulator as well as their acceptance of the technology and attitudes they had before and after training.¹⁷

Learnings from review of literatures

- Importance of training needs assessment: Literature on training needs assessment emphasized the significance of understanding the specific knowledge and skills gaps among healthcare professionals when implementing a computerized patient record system
- Training methods and approaches: The literature discussed various training methods and approaches utilized for teaching doctors and nurses about CPRS. These included classroom-based training, hands-on practice sessions, online modules, simulations, and role-playing exercises.
- Factors influencing training outcomes: The literature review identified factors that influenced the training outcomes, such as the duration and intensity of training, prior computer literacy of participants, organizational support, and the availability of ongoing support and resources post-training. Understanding these factors can help shape future training initiatives and optimize their effectiveness.
- Challenges and barriers: The literature discussed common challenges and barriers encountered during the training process, such as resistance to change, time constraints, lack of technical infrastructure, and limited access to training resources. Addressing these challenges can help improve the implementation and acceptance of CPRS among doctors and nurses.

Gaps Identified

- Limited research on specific healthcare settings: One potential gap in the literature is the lack of studies focusing on specific healthcare settings, such as hospitals, clinics, or long-term care facilities. Different healthcare settings may have unique training needs

and evaluation requirements for CPRS. Further research is needed to understand the context-specific factors that influence training effectiveness.

- Insufficient attention to interprofessional training: The literature revealed a gap in interprofessional training, where doctors and nurses are trained together on CPRS. Collaboration and effective communication between doctors and nurses are crucial for optimal patient care.
- Lack of standardized evaluation measures: The literature identified a gap in the use of standardized evaluation measures for assessing training outcomes. While various evaluation methods exist, the lack of consistency in evaluation tools and metrics across studies makes it challenging to compare findings. Developing standardized evaluation measures would enable more robust comparisons and meta-analyses across studies.
- Limited research on the impact of training on patient outcomes: While the literature highlighted improvements in knowledge and skills following training, there is a gap in research that directly examines the impact of CPRS training on patient outcomes. Further studies are needed to investigate the link between training effectiveness, healthcare professionals' performance, and patient outcomes.

Chapter 3 : Methodology

HYPOTHESIS : The training provided to doctors and nurses on Computerized Patient Record system will improve their skills and knowledge of using CPRS and enhance their ability to work efficiently with the system, resulting in improved patient outcomes.

RESEARCH QUESTION –

1. What are the training needs and preferences of doctors and nurses for the CPRS implementation
2. What is the knowledge and skill set of doctors and nurses before training ?
3. What are the gap areas after training on which further trainings are required ?

Research Objectives

- To identify the specific training needs and preferences of doctors and nurses for the CPRS
- To obtain a baseline data on the knowledge and skills of the participants
- To compare the baseline data (Pre training evaluation) to the post-training evaluation to assess the effectiveness of the training program
- To find gap areas in order to identify any areas where further training may be needed

STUDY DESIGN: The study design was a cross-sectional. The primary data was collected through semi-structured questionnaires interviewed from the doctors and nurses to found out the training need analysis .

STUDY AREA- The study area for the study was BLK-MAX Super Specialty Hospital, New Delhi. BLK Super Specialty Hospital was established by Dr. B.L. Kapur in 1959.

STUDY POPULATION – The study population included doctors and nurses who will be the direct end users of CPRS . Other paramedical staff such as pharmacists , radiologists etc are not included in the study .

DURATION OF STUDY – 3 Months (28th February 2023 to 29th May 2023)

SAMPLE SIZE: 100 (Including doctors and nurses)

SAMPLING TECHNIQUE: Simple Random Sampling etc.

MODE OF DATA COLLECTION: The data will be collected through google forms .

A pre-training evaluation was conducted to assess the baseline knowledge and skills of the participants. Then, a customized training program was developed and implemented for the participants. A post-training evaluation was conducted to assess the effectiveness of the training program.

DATA ANALYSIS (TOOL): Google forms was used for data collection and then pie charts and bar graphs will be used for pictorial representation of data .

ETHICAL CONSIDERATION (CONSENT FORM) : After receiving clearance from the institution's ethical committee and receiving participants' signed informed consent, this study will be carried out. The participants will be made aware of the study's objectives, their ability to withdraw at any time, the confidentiality of their information, and any risks and advantages that may be related to the study. Before taking part in the study, individuals will sign the consent form. .Data collected and entered will be confidential and the data will not be used for any other purpose other than this research.The final report would be submitted to the concerned authority .

Chapter 4 : Results

TRAINING NEED ASSESSMENT RESULTS AND ANALYSIS

1. Respondent Profile ?

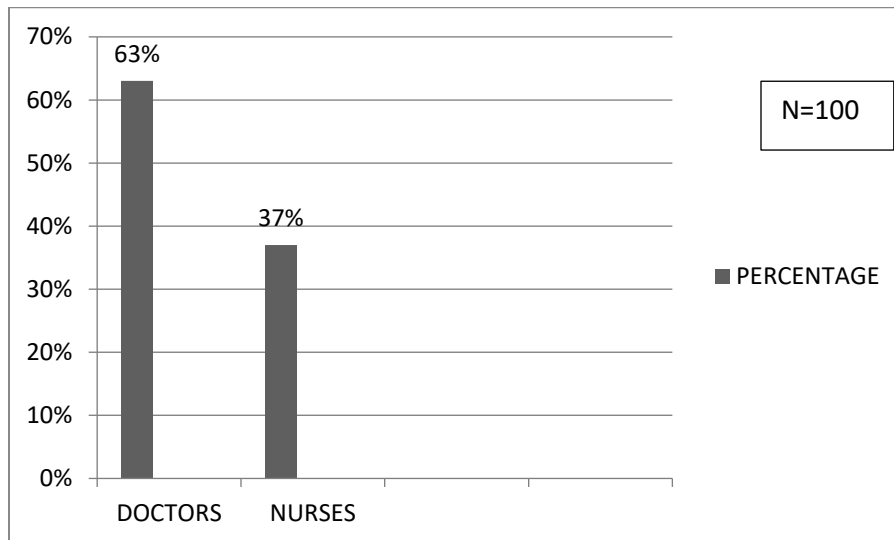


Fig 4.1 Current job role

The above figure 4.1 reflect_ that the respondents profile and their current job. The study shows that out of total sample size of 100, 63 were doctors and rest of the around one -third of the respondents (37) were nurses. As the study was focuses on assessing the training needs and evaluating the pre and post-training effectiveness of doctors and nurses in utilizing the computerized patient record system (CPRS) hence to understand the the job roles of the respondents was necessary.

2. On a scale of 5 how will you rate yourself in terms of proficiency with computer application ?

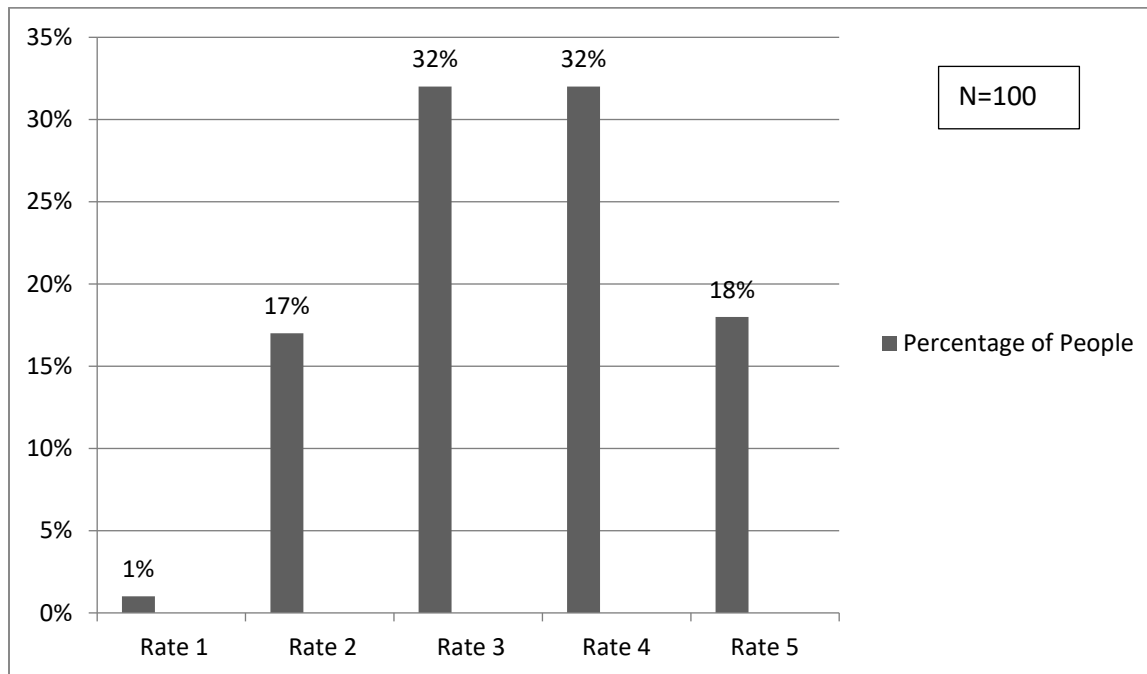


Fig 4.2 Proficiency with computer applications

The table 4.2 depicts about the rating on a scale of 5 in terms of proficiency with computer applications. The ratings provided by the participants indicate their self-perceived proficiency levels.

From the data provided, it can be inferred that:

- One person rated themselves as 1, indicating a very low level of proficiency.
- 17 people rated themselves as 2, suggesting a relatively low proficiency level.
- 32 people rated themselves as 3 or 4, indicating a moderate level of proficiency.
- 17 people rated themselves as 5, suggesting a high level of proficiency.

These ratings indicate the participants' self-assessed levels of competence with computer applications, as evaluated within the context of the study on CPRS training and evaluation.

3. Rate your typing ability

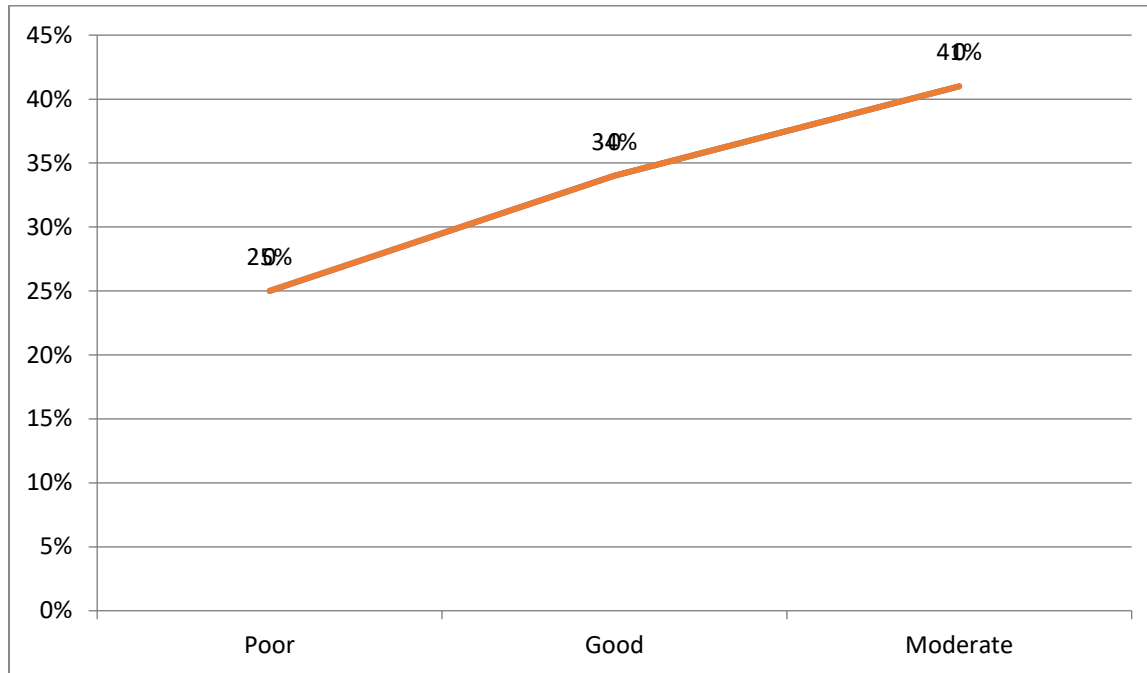


Fig 4.3 Typing Ability of respondents

From table 4.3 ,It can be inferred that –

- 25% of the participants rated themselves as poor in terms of their typing ability.
- 34% of the participants rated themselves as good in terms of their typing ability.
- 41% of the participants rated themselves as moderate in terms of their typing ability.

These ratings represent the participants' self-assessed levels of typing proficiency as evaluated within the context of the study on CPRS training and evaluation. The study aims to assess the participants' typing skills and their relevance to effectively utilizing computerized patient record systems.

4. Do you know about the concept of EHR and EMR ?

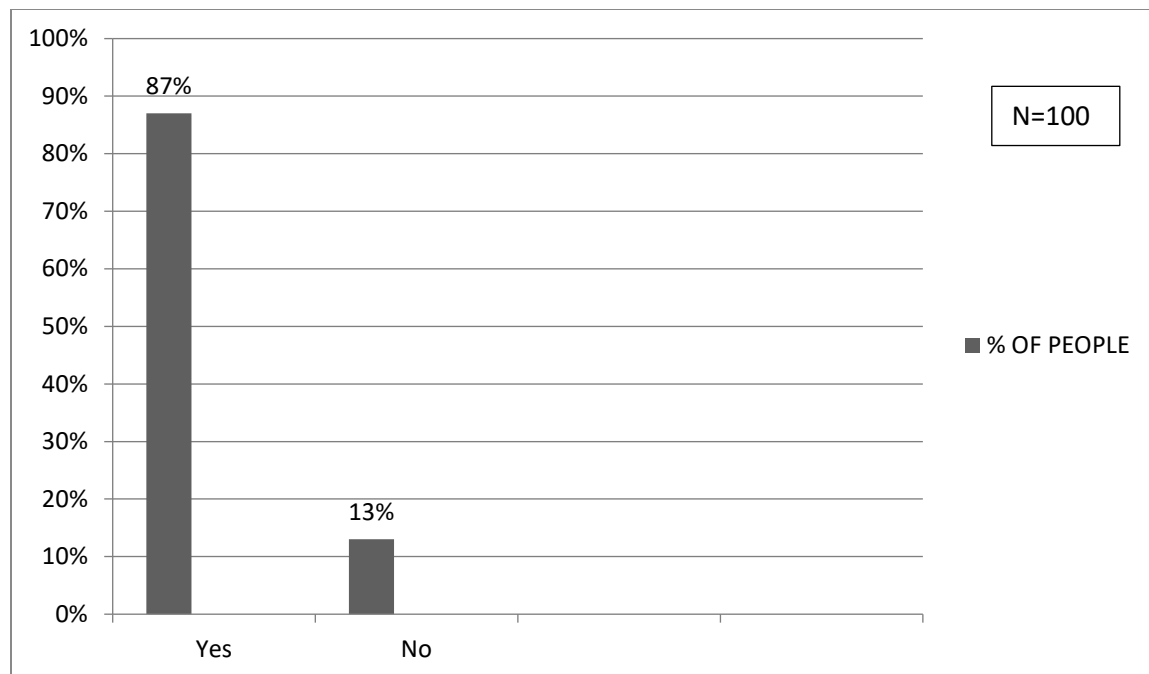


Fig 4.4 Knowledge about EHR and EMR

From table 4.4 , can be inferred that –

- 87% of the participants knew about the concept of EHR and EMR.
- 13% of the participants did not know about the concept of EHR and EMR.

These percentages represent the participants' awareness or lack thereof regarding the concepts of EHR and EMR. The study aims to assess the participants' knowledge and understanding of these concepts, which are relevant to the utilization of computerized patient record systems (CPRS) in the healthcare setting.

5. Have you heard about CPRS before ?

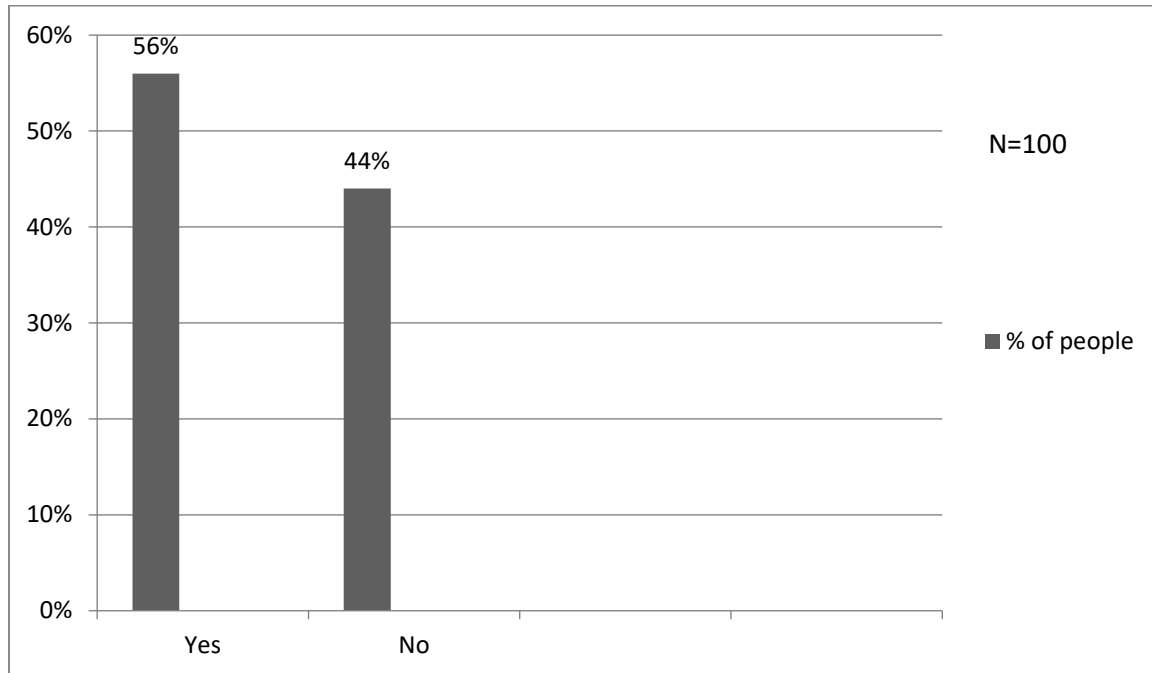


Fig 4.5 Knowledge about CPRS

From table 4.5 , it can be inferred that –

- 56% of the participants have heard about CPRS before.
- 44% of the participants have not heard about CPRS before.

These percentages represent the participants' familiarity or lack thereof with CPRS. The study aims to assess the participants' prior exposure or knowledge regarding CPRS, which is the computerized system for maintaining patient records. This information is crucial for understanding the participants' baseline awareness and understanding of CPRS before undergoing the training and evaluation in the study.

6. If yes , are you aware of the benefits of using CPRS ?

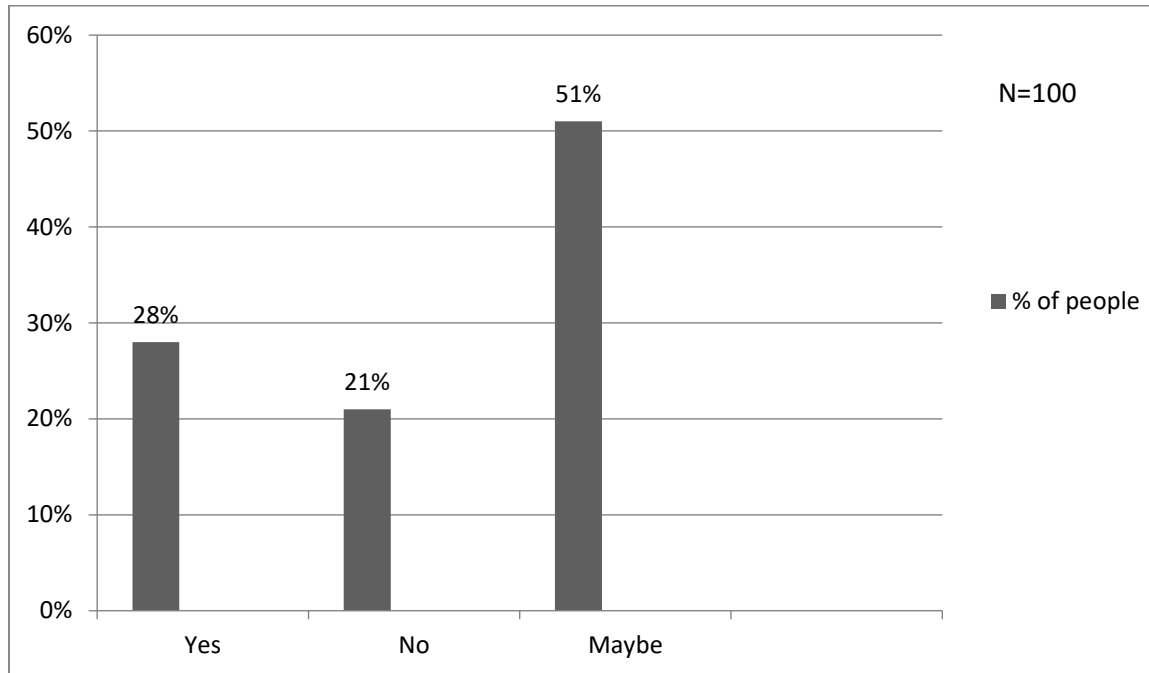


Fig 4.6 Knowledge about benefits of CPRS

From table 4.6 , it can be inferred that –

- 28% of the participants answered "yes" and are aware of the benefits of using CPRS.
- 21% of the participants answered "no" and are not aware of the benefits of using CPRS.
- 51% of the participants answered "maybe," indicating uncertainty regarding their awareness of the benefits of using CPRS.

These percentages represent the participants' levels of awareness and understanding of the benefits of utilizing CPRS. The study aims to assess the participants' knowledge regarding the advantages associated with CPRS, which is essential for evaluating their training needs and assessing the impact of the training on their perception of the benefits.

7. Do you think implementing CPRS will greatly influence patient satisfaction and will help in delivering quality of care ?

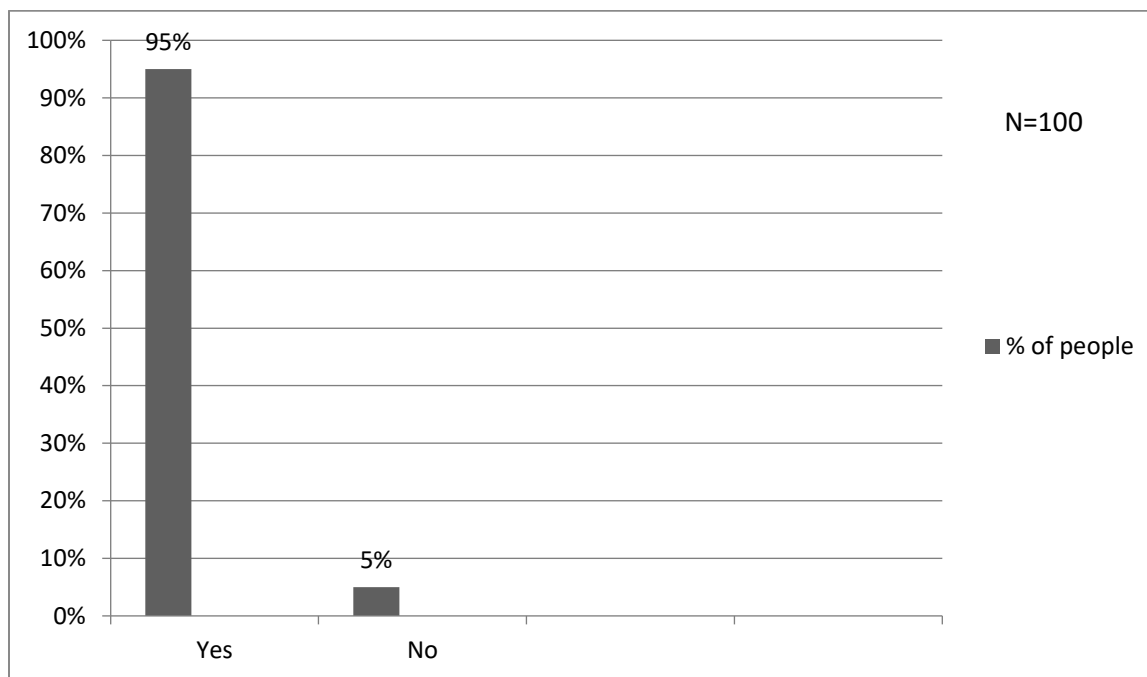


Fig 4.7 Awareness of the respondents on whether CPRS will benefit delivery of care

From table 4.7 ,It can be inferred that -

- 95% of the participants answered "yes" and believe that implementing CPRS will greatly influence patient satisfaction and help in delivering quality of care.
- 5% of the participants answered "no" and do not believe that implementing CPRS will have a significant impact on patient satisfaction and the delivery of quality care.

These percentages represent the participants' perspectives on the potential benefits of implementing CPRS in terms of patient satisfaction and care quality. The majority of participants (95%) hold a positive belief that CPRS implementation will have a substantial positive influence on patient satisfaction and the quality of care delivered. On the other hand, a small percentage (5%) express a differing opinion and do not expect CPRS to make a significant difference.

These findings provide insights into the participants' initial perceptions and expectations, which can be further explored and analyzed in the study's training needs assessment and subsequent evaluations. Understanding the participants' attitudes towards CPRS implementation is essential

for tailoring effective training programs and evaluating the actual impact of CPRS on patient satisfaction and care quality.

8. How much estimated time will you need to get a hands on CPRS and start using it ?

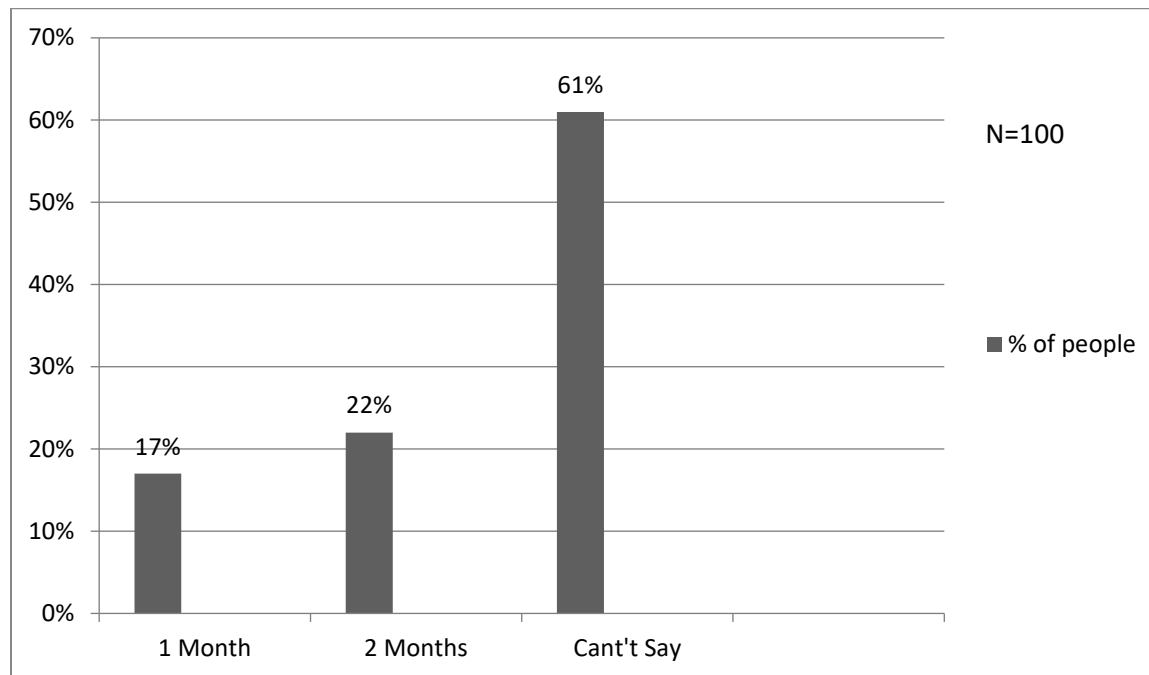


Fig 4.8 Estimated time needed by respondents to get a hands on CPRS

From table 4.8 , it can be inferred that:

- 17% of the participants estimate that they will need 1 month to gain hands-on experience and start using CPRS.
- 22% of the participants estimate that they will need 2 months to gain hands-on experience and start using CPRS.
- 61% of the participants responded with "can't say," indicating uncertainty about the estimated time required.

These percentages represent the participants' expectations regarding the time needed to become familiar with CPRS and start utilizing it effectively. A portion of the participants (17% and 22%) have provided specific time estimates, suggesting a perceived timeframe for acquiring proficiency. However, the majority of participants (61%) expressed uncertainty about the duration, indicating that they are unsure about the specific timeframe required.

These findings highlight the varying perceptions and uncertainties among the participants regarding the time needed to gain proficiency in using CPRS. This information can help guide the training program and expectations management, as it provides insights into the participants' initial understanding of the learning curve associated with CPRS implementation.

9. Which mode of training will be suitable for you ?

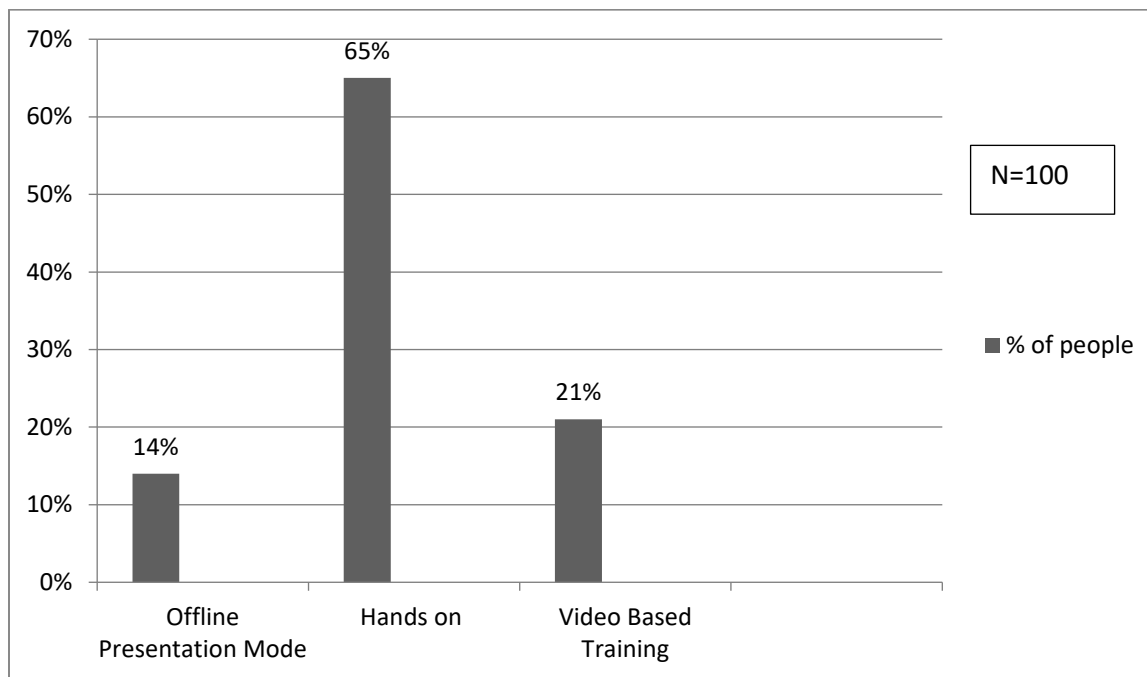


Fig 4.9 Mode of training suitable for respondents

From table 4.9 , it can be inferred that:

- 65% of the participants prefer a hands-on training approach.
- 21% of the participants prefer video-based training.
- 14% of the participants prefer an offline presentation mode.

These percentages represent the participants' preferences regarding the suitable mode of training for them. The majority of participants (65%) express a preference for hands-on training, indicating their desire for interactive and practical learning experiences with CPRS. A significant portion (21%) prefer video-based training, suggesting an inclination towards visual learning materials and self-paced instruction. A smaller percentage (14%) prefer an offline presentation mode, indicating a preference for traditional classroom-style instruction.

These findings provide valuable insights into the participants' preferred modes of training, which can help inform the design and delivery of the training program. Incorporating a mix of hands-on training, video-based resources, and offline presentations may cater to the varying preferences and learning styles of the participants, ensuring an effective and engaging training experience .

10. Have you gone through the user information manual of CPRS provided to you ?

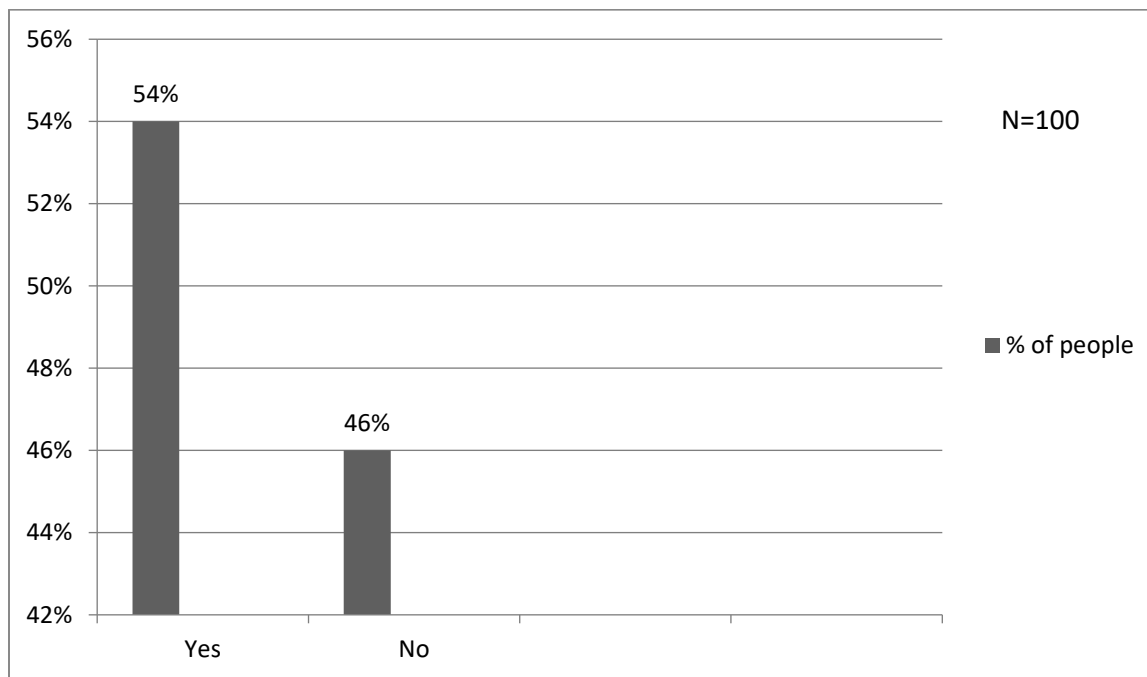


Fig 4.10 Whether user information manual was read by the respondents

From table 4.10 , it can be inferred that:

- 54% of the participants have answered "yes," indicating that they have gone through the user information manual of CPRS.
- 46% of the participants have answered "no," indicating that they have not gone through the user information manual.

These percentages represent the participants' level of familiarity with the user information manual of CPRS. The study aims to assess the participants' engagement with the manual, which serves as a source of essential information about the CPRS system. Participants who have gone through the manual (54%) may have a better understanding of the system's functionalities and features, potentially contributing to their readiness for training and implementation. On the other

hand, participants who have not gone through the manual (46%) may require additional guidance and support in acquiring the necessary knowledge and skills related to CPRS.

These findings suggest that providing clear instructions and emphasizing the importance of reviewing the user information manual can enhance participants' preparedness for CPRS training and implementation. Additionally, follow-up assessments and targeted training sessions can be designed to address the specific needs of participants who have not gone through the manual.

11. Are you aware of your role-specific function accessibility in CPRS ?

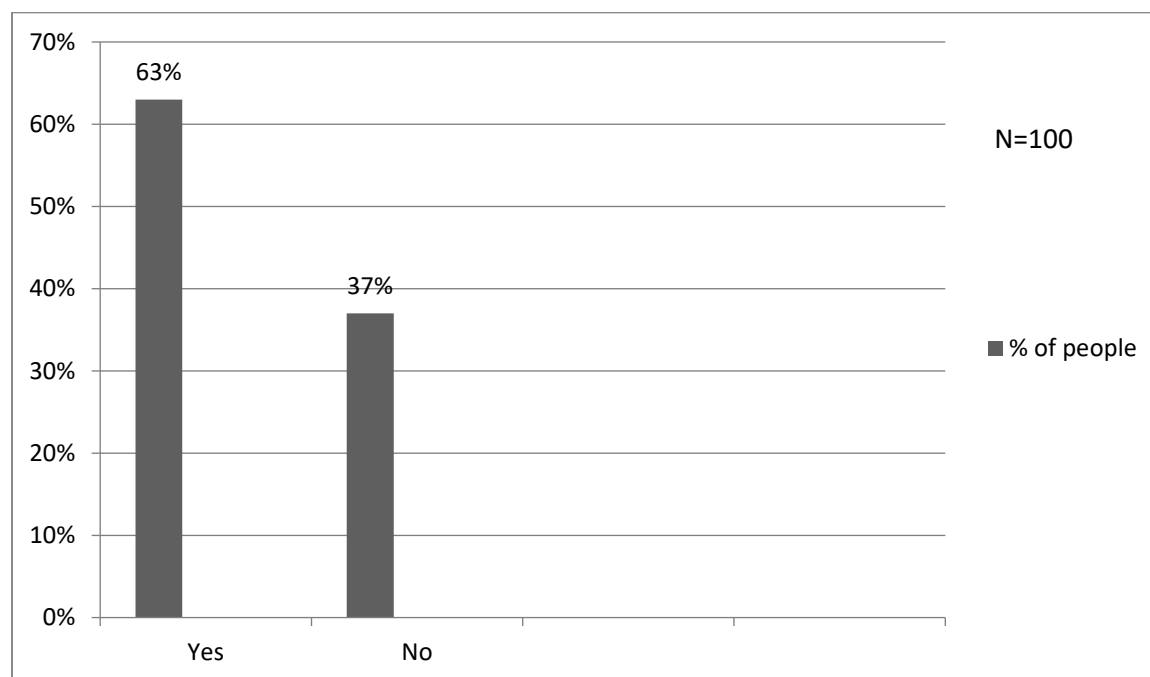


Fig 4.11 Awareness about role specific function accessibility in CPRS

From table 4.11 , It can be inferred that

- Three-fourth (63%) of the participants answered "no" and are not aware of their role-specific function accessibility in CPRS.
- 37% of the participants answered "yes" and are aware of their role-specific function accessibility in CPRS.

These percentages represent the participants' level of awareness regarding the functions available to them in CPRS based on their specific roles. The study aims to assess the participants'

knowledge of the system's functionalities that are relevant to their roles, which is crucial for effective utilization of CPRS.

12. Are you aware of VISTA IDs and its use while accessing patients records ?

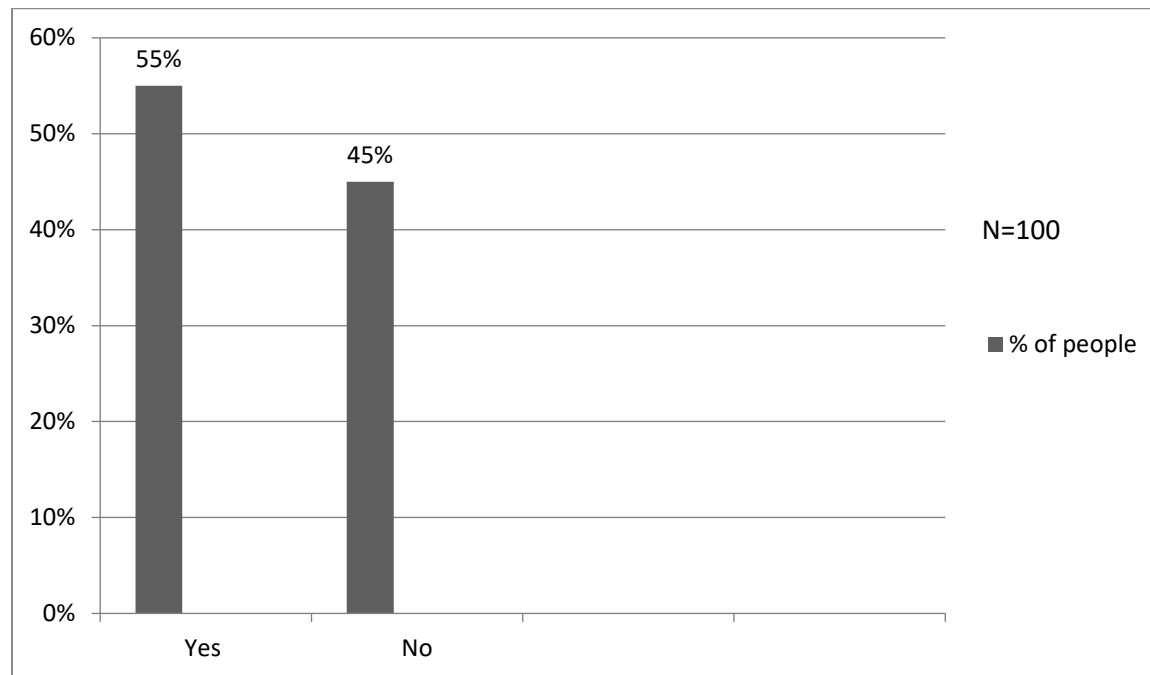


Fig 4.12 Awareness about VISTA IDs

From table 4.12 , it can be inferred that:

- 55% of the participants answered "no" and are not aware of VISTA IDs and their use for accessing patient records.
- 45% of the participants answered "yes" and are aware of VISTA IDs and their use for accessing patient records.

These percentages represent the participants' level of awareness regarding the existence and purpose of VISTA IDs when accessing patient records within CPRS. The study aims to assess the participants' understanding of the importance of VISTA IDs for proper authentication and access to patient information. Participants who responded "no" (55%) may require further education and training to familiarize themselves with the concept and utilization of VISTA IDs. On the other hand, participants who responded "yes" (45%) demonstrate a level of familiarity with VISTA IDs and their significance in accessing patient records.

These findings emphasize the importance of providing clear guidance and training on the use of VISTA IDs to ensure proper and secure access to patient records within CPRS. By addressing the knowledge gaps and enhancing participants' awareness of VISTA IDs, the study can contribute to improved data security, confidentiality, and overall efficiency in utilizing CPRS for patient care.

13. Are you aware of electronic signatures in context of CPRS?

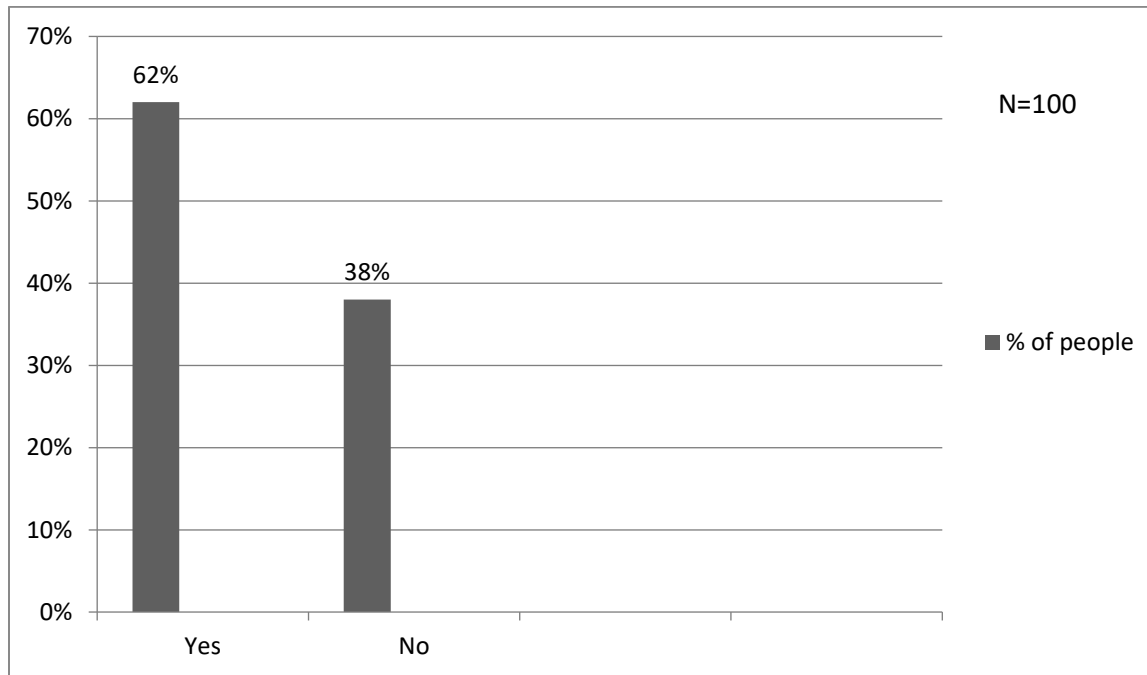


Fig 4.13 Awareness about electronic signatures

From table 4.13, it can be inferred that:

- 62% of the participants answered "yes" and are aware of electronic signatures in the context of CPRS.
- 38% of the participants answered "no" and are not aware of electronic signatures in the context of CPRS.

These percentages represent the participants' level of awareness regarding the use of electronic signatures within CPRS. The study aims to assess the participants' understanding of the significance and functionality of electronic signatures for authentication and documentation purposes. Participants who responded "no" (38%) may require further education and training to

familiarize themselves with the concept and utilization of electronic signatures within CPRS. On the other hand, participants who responded "yes" (62%) demonstrate a level of awareness regarding the use of electronic signatures and their importance in ensuring proper documentation and legal compliance within CPRS.

These findings highlight the importance of providing comprehensive training and guidance on the use of electronic signatures within CPRS to ensure accurate and secure record-keeping practices. By addressing the knowledge gaps and enhancing participants' awareness of electronic signatures, the study can contribute to the effective implementation and utilization of CPRS, promoting efficient and legally compliant documentation within the healthcare setting.

14. Are you aware of the various functions one can perform using CPRS?

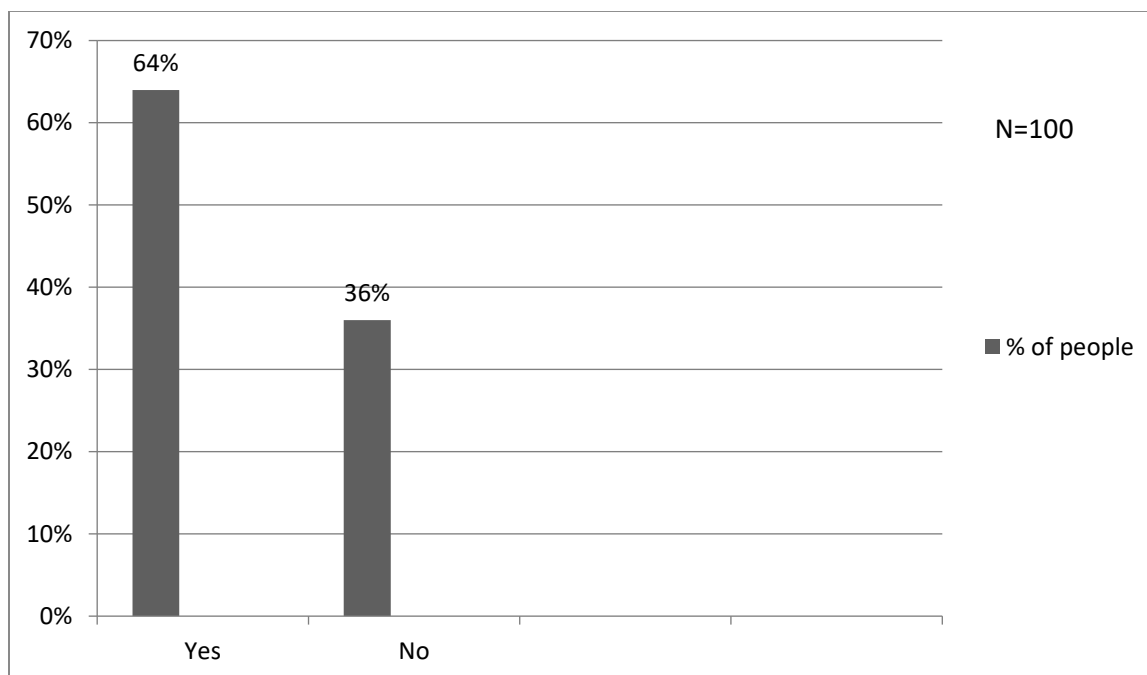


Fig 4.14 Awareness about functions one can perform on CPRS

From table 4.14 it can be inferred that:

- 64% of the participants answered "yes" and are aware of the various functions one can perform using CPRS.
- 35% of the participants answered "no" and are not aware of the various functions in CPRS.

These percentages represent the participants' level of awareness regarding the different functions and capabilities offered by CPRS. The study aims to assess the participants' familiarity with the system's functionalities to identify potential training needs and gaps in understanding.

Participants who responded "no" (35%) may require further education and training to become aware of the wide range of functions available in CPRS. On the other hand, participants who responded "yes" (64%) demonstrate a level of knowledge and understanding of the various functions they can perform using CPRS.

These findings emphasize the importance of providing comprehensive training and ongoing support to ensure that participants are fully aware of and proficient in utilizing the different functions within CPRS. By addressing the knowledge gaps and enhancing participants' awareness of CPRS functions, the study can contribute to improved efficiency and effectiveness in utilizing the system for patient care and record management

15. Which all patient record sheets does the CPRS contain (Multiple answers possible)

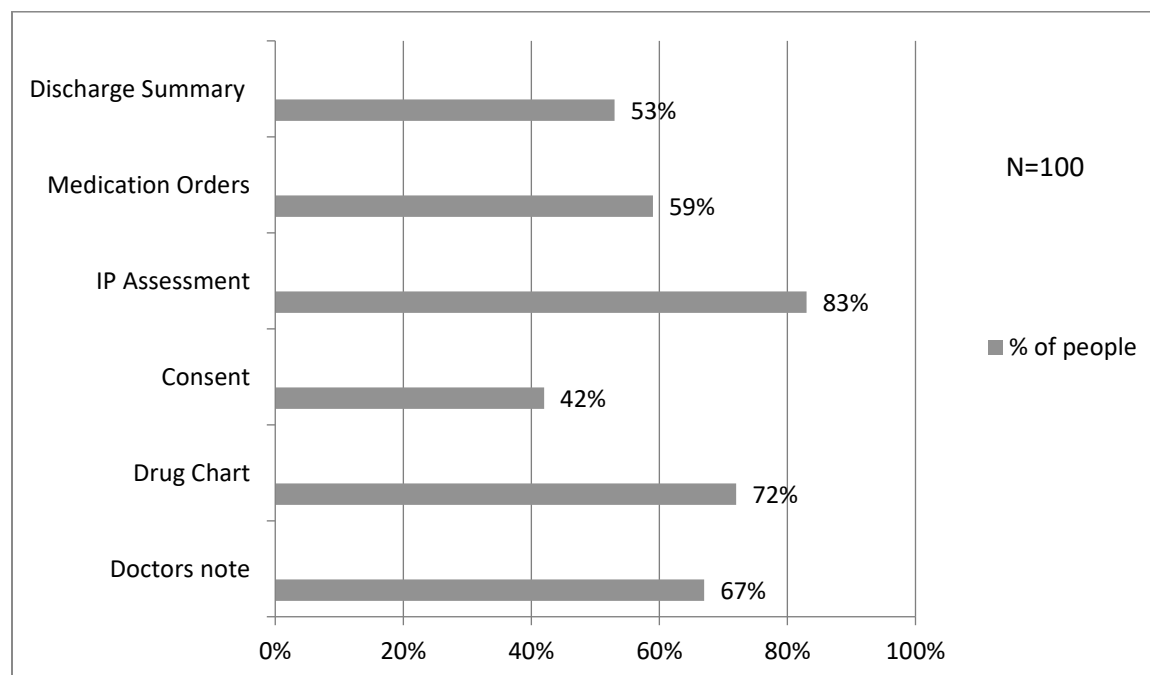


Fig 4.15 Awareness about Patient record sheets that CPRS can contain

From tale 4.15 , it can be inferred that:

- Doctors note: 67% of the participants are aware that CPRS contains doctors' notes.

- Drug chart: 72% of the participants are aware that CPRS contains drug charts.
- Consent: 42% of the participants think that consent can also be taken on CPRS which is completely wrong as Consent records are to be maintained manually mandatorily .
- IP Assessment: 83% of the participants are aware that CPRS contains IP assessments.
- Medication order: 59% of the participants are aware that CPRS contains medication orders.
- Discharge summary: 53% of the participants are aware that CPRS contains discharge summaries.

These percentages represent the participants' level of awareness regarding the different types of patient record sheets that can be found in CPRS. The study aims to assess the participants' knowledge of the available record sheets to identify their understanding of the system's functionalities. Participants who have indicated awareness of specific record sheets demonstrate knowledge of the corresponding types of patient documentation within CPRS.

These findings highlight the importance of providing comprehensive training and guidance on the use and interpretation of different patient record sheets within CPRS. By addressing the knowledge gaps and enhancing participants' awareness of the available record sheets, the study can contribute to more accurate and efficient documentation practices, ultimately improving patient care and information management within the healthcare setting.

16. Do you think you can raise order for medication through CPRS ?

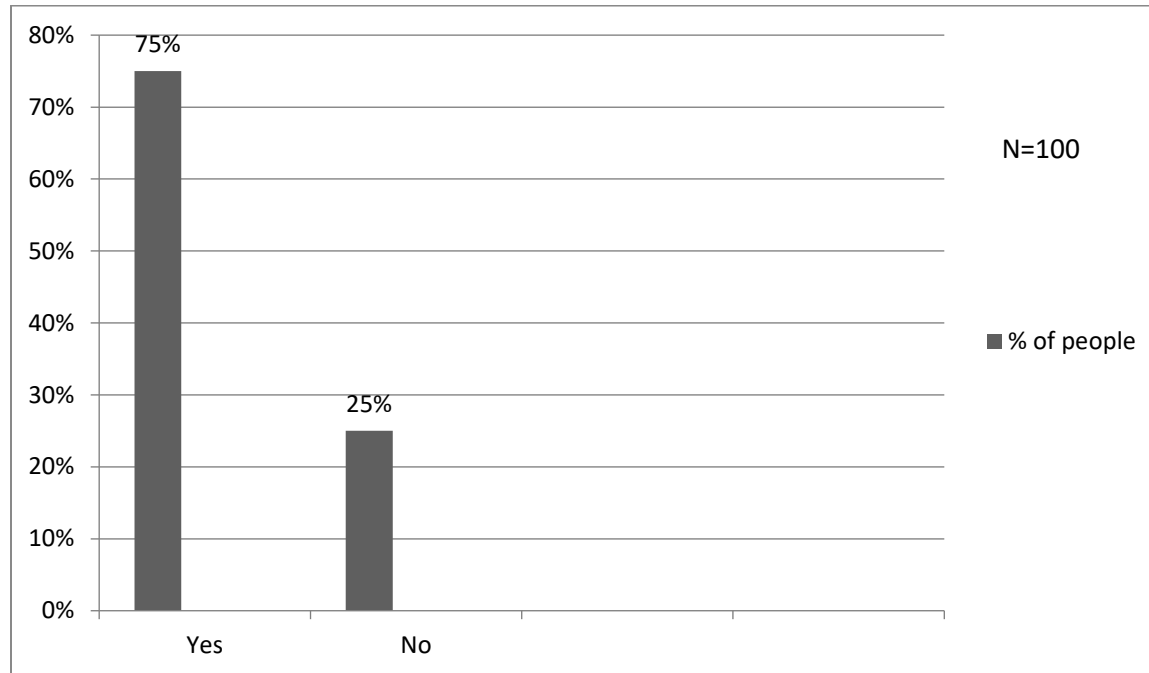


Fig 4.16 Awareness if order can be raised through CPRS

From table 4.16 , it can be inferred that:

- 75% of the participants answered "yes" and believe that they can raise orders for medication through CPRS.
- 25% of the participants answered "no" and do not believe that they can raise orders for medication through CPRS.

These percentages represent the participants' self-assessment regarding their confidence in utilizing CPRS to raise medication orders. The study aims to assess the participants' perception of their ability to utilize CPRS effectively for medication management. Participants who responded "yes" (75%) demonstrate confidence in their skills and knowledge of the system's functionalities related to medication ordering. On the other hand, participants who responded "no" (25%) express a lack of confidence or uncertainty regarding their ability to raise medication orders through CPRS.

These findings highlight the importance of providing comprehensive training and support to ensure that participants are equipped with the necessary skills and knowledge to effectively

utilize CPRS for medication ordering. By addressing the knowledge gaps and building participants' confidence in utilizing CPRS, the study can contribute to improved medication management processes, promoting accuracy and efficiency in prescribing and administering medications within the healthcare setting

17. Have you heard about Clinical Decision Support System (CDSS)?

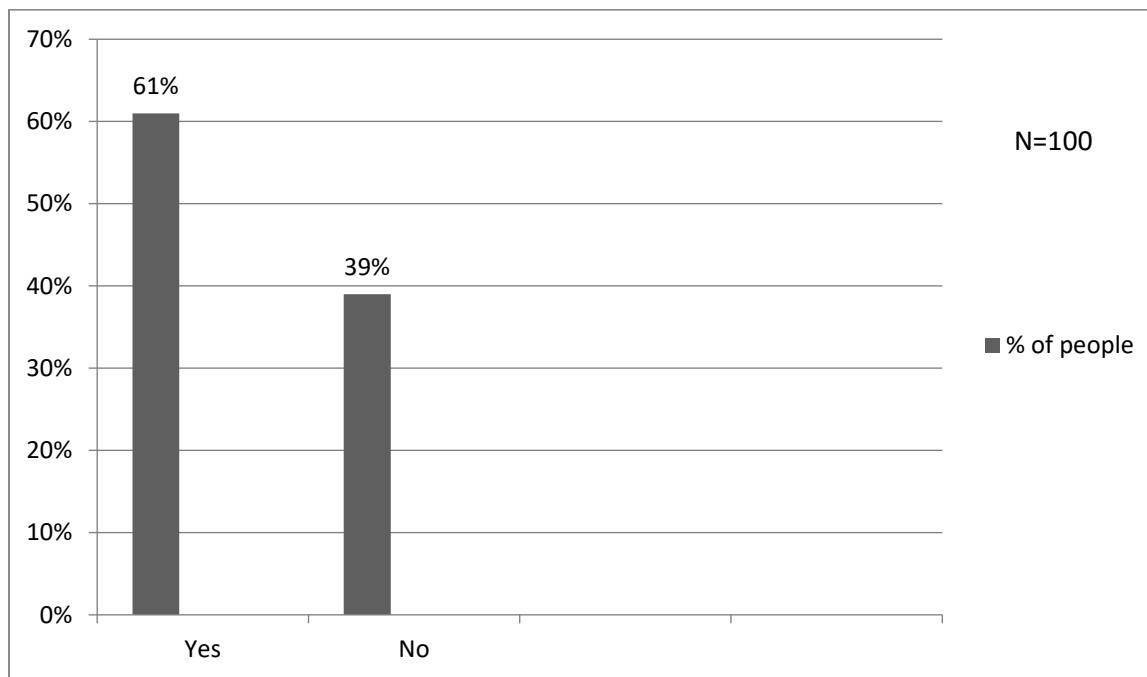


Fig 4.17 Awareness about CDSS

From table 4.17 ,it can be inferred that:

- 61% of the participants answered "no" and have not heard about the Clinical Decision Support System (CDSS).
- 39% of the participants answered "yes" and are aware of the Clinical Decision Support System (CDSS).

These percentages represent the participants' level of awareness regarding CDSS, which is a system designed to assist healthcare professionals in making clinical decisions by providing evidence-based recommendations and alerts. The study aims to assess the participants' familiarity with CDSS to identify potential gaps in knowledge and training needs.

The finding that 61% of the participants are not aware of CDSS indicates a lack of familiarity with this specific system. This highlights the importance of providing education and training on CDSS to enhance participants' understanding and utilization of this valuable tool in clinical decision-making. On the other hand, the 39% of participants who are aware of CDSS demonstrate some level of knowledge and familiarity with the system.

By addressing the knowledge gap and increasing awareness of CDSS through training and education, the study can contribute to improving the participants' ability to leverage CDSS effectively within their clinical practice. This can lead to enhanced decision-making, improved patient outcomes, and more efficient and accurate healthcare delivery.

18. Do you need training on CDSS ?

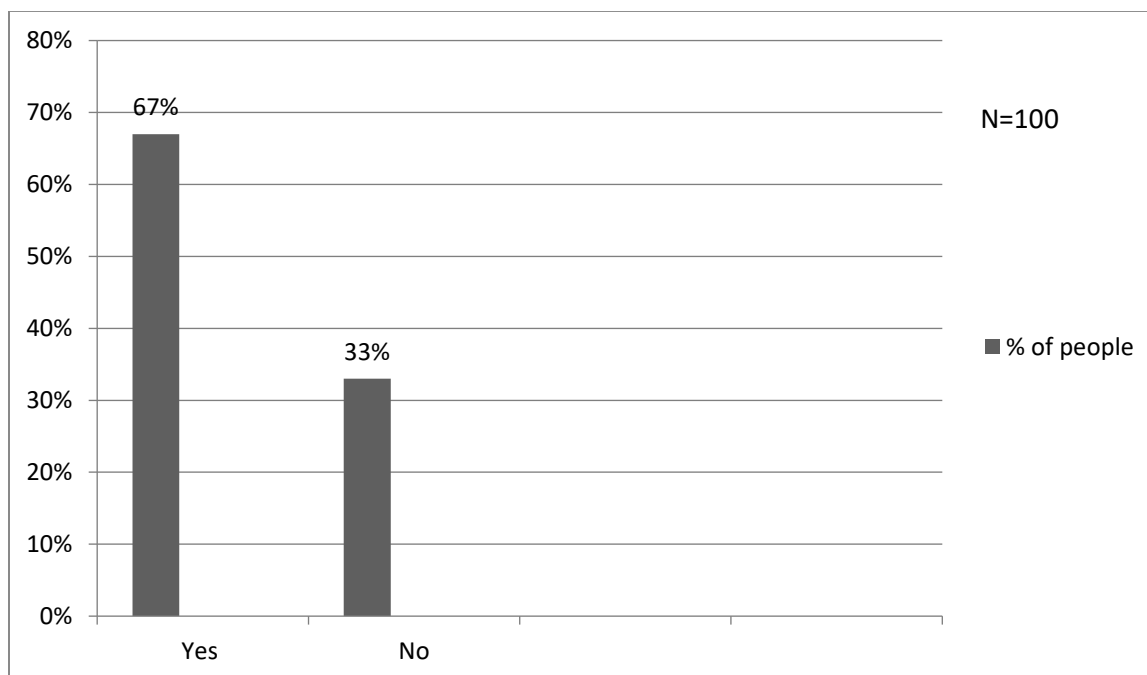


Fig 4.18 Information whether training on CDSS is needed

From table 4.18 , it can be inferred that:

- 67% of the participants answered "yes" and expressed a need for training on the Clinical Decision Support System (CDSS).
- 33% of the participants answered "no" and do not feel the need for training on CDSS.

These percentages represent the participants' self-assessment regarding their perceived need for training on CDSS. The study aims to assess the participants' awareness of their training requirements and identify the gaps in their knowledge and skills related to CDSS.

The finding that 67% of the participants expressed a need for training on CDSS indicates that a significant portion of the participants recognizes the importance of acquiring knowledge and skills related to this system. This highlights the importance of providing comprehensive training programs that address the participants' training needs and enhance their proficiency in utilizing CDSS effectively.

On the other hand, the 33% of participants who responded "no" may already have sufficient knowledge and skills related to CDSS or perceive their existing proficiency as satisfactory. However, it is important to evaluate their level of understanding and ensure that they have the necessary competence to make informed clinical decisions using CDSS.

19. According to you , Which all patient data should be compulsorily entered in in CPRS ? (Multiple Answers Possible)

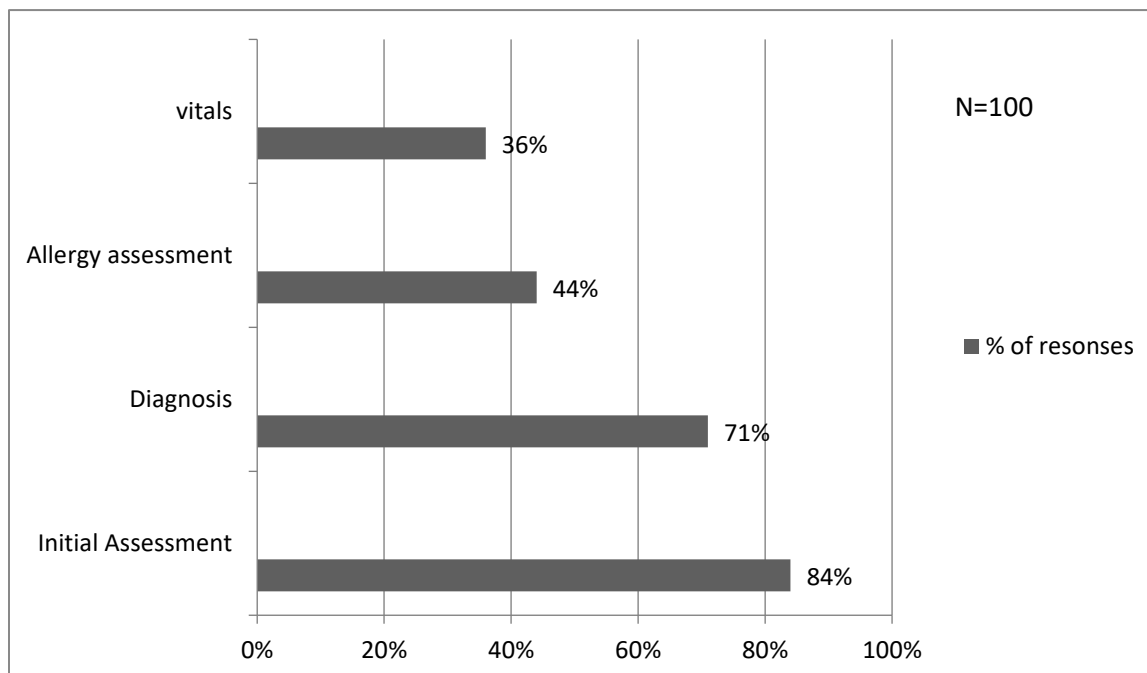


Fig 4.19 Awareness about the data that is mandatory to be filled in CPRS

From table 4.19 , it can be inferred that:

- 84% of the participants identified the initial assessment as a patient data that should be compulsorily entered in CPRS.
- 71% of the participants identified the diagnosis as a patient data that should be compulsorily entered in CPRS.
- 44% of the participants identified the allergy assessment as a patient data that should be compulsorily entered in CPRS.
- 36% of the participants identified the vitals as a patient data that should be compulsorily entered in CPRS.

These percentages represent the participants' perception of the patient data that should be recorded in CPRS. The study aims to assess the participants' understanding of the importance of capturing specific patient information in CPRS for effective patient care and documentation.

20.What do you think , Are Clinical Reminders important ?

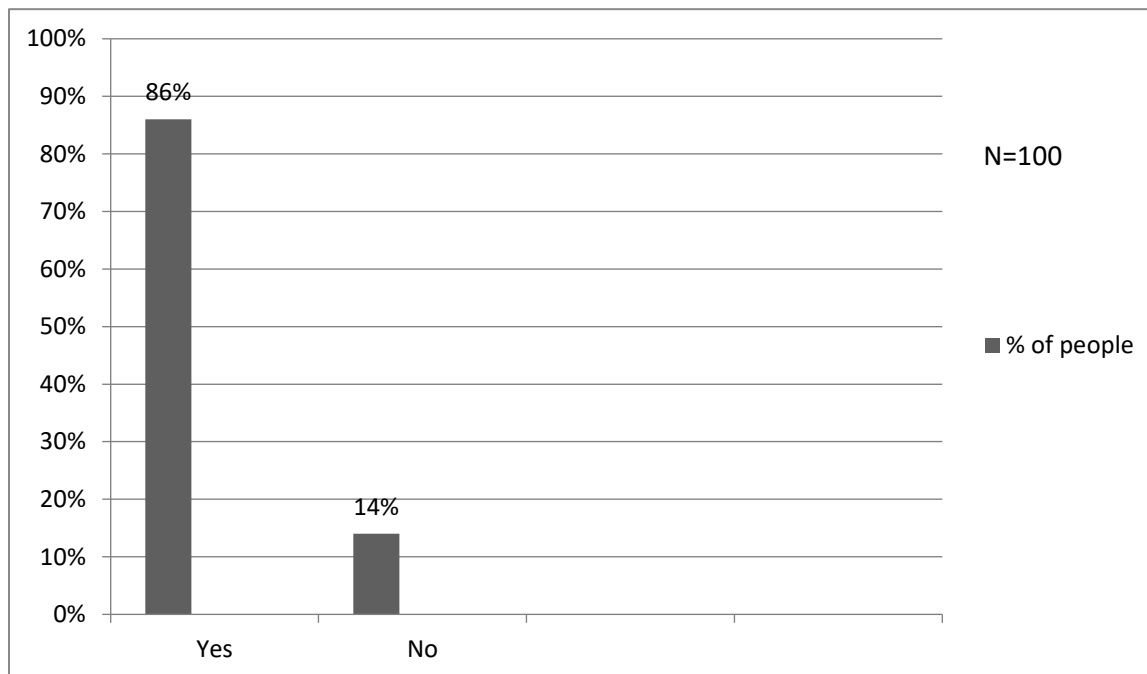


Fig 4.20 Awareness on clinical reminders

From table 4.20 , it can be inferred that:

- 86% of the participants answered "yes" and believe that Clinical Reminders are important.

- 14% of the participants answered "no" and do not consider Clinical Reminders to be important.

These percentages represent the participants' opinions and beliefs regarding the importance of Clinical Reminders. The study aims to assess the participants' awareness of the role and value of Clinical Reminders in CPRS and their potential impact on patient care.

20. Orders that can be taken on CPRS are ?

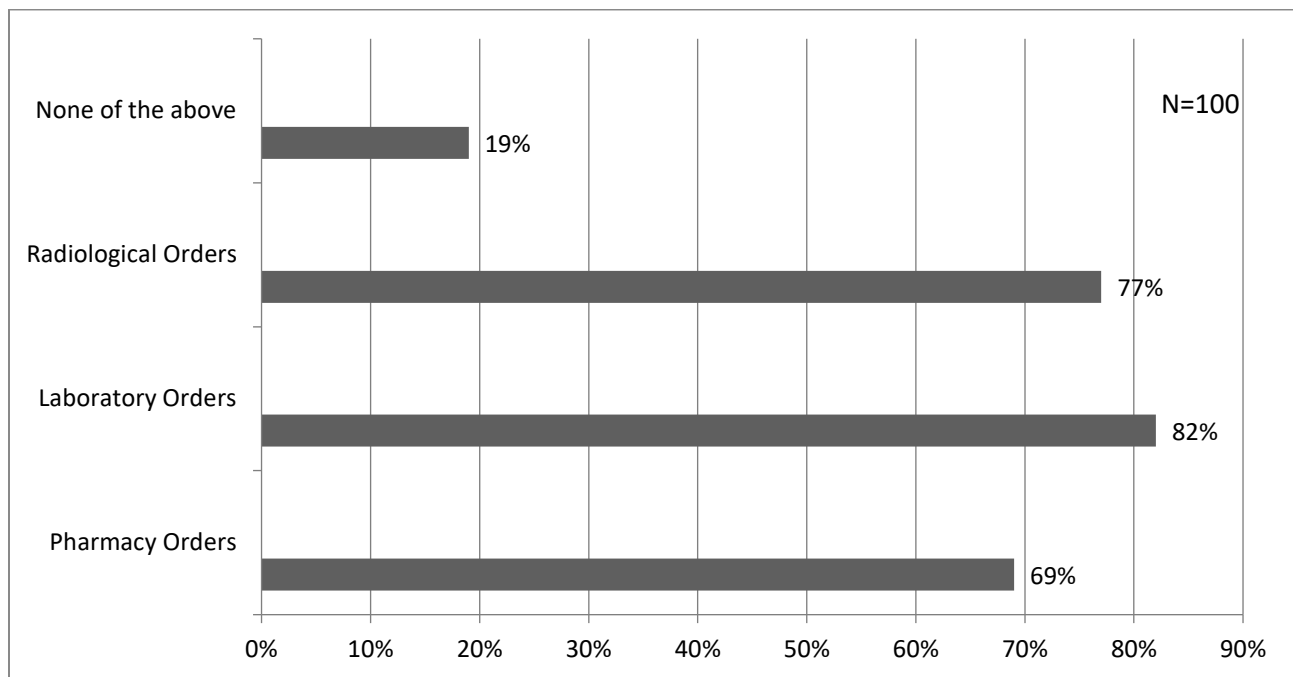


Fig 4.21 Awareness on the orders that can be raised on CPRS

From table 4.21 ,it can be inferred that:

- 69% of the participants identified pharmacy orders as orders that can be taken on CPRS.
- 82% of the participants identified laboratory orders as orders that can be taken on CPRS.
- 77% of the participants identified radiological orders as orders that can be taken on CPRS.
- 19% of the participants indicated that all of the above options are orders that can be taken on CPRS.

These percentages represent the participants' understanding of the types of orders that can be entered into CPRS. The study aims to assess the participants' knowledge and awareness of the functionalities and capabilities of CPRS in managing various types of orders for patient care.

21. What do you think , Can Reports be viewed on CPRS ?

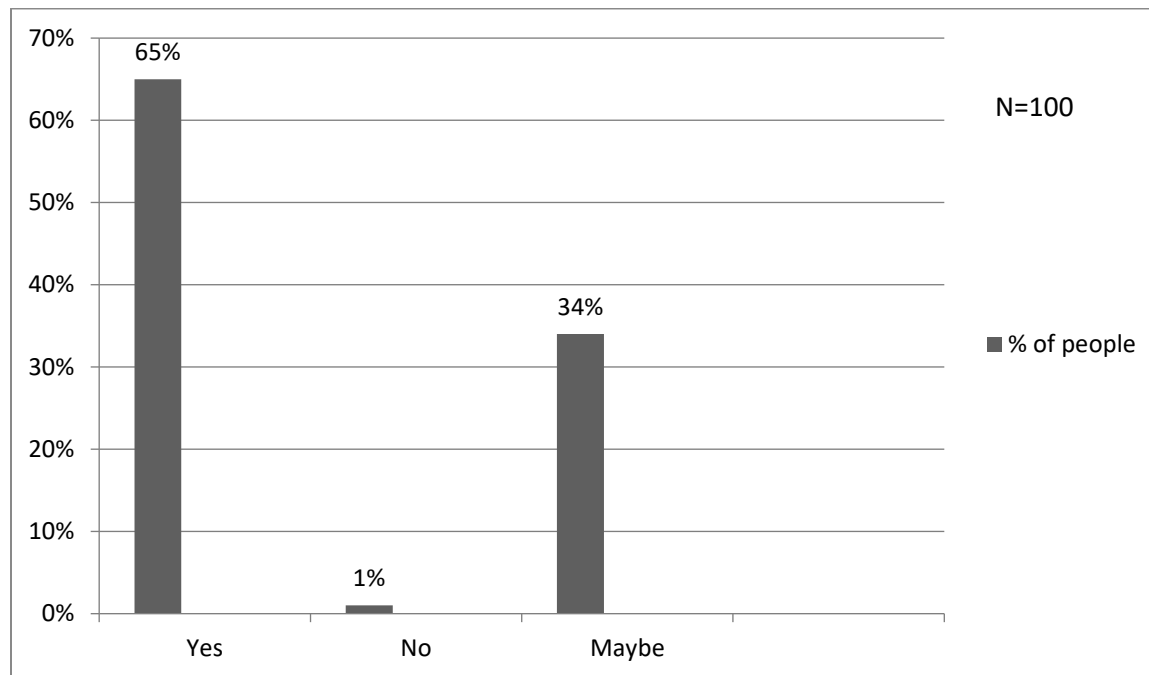


Fig 4.22 Awareness on whether reports can be viewed on CPRS

From table 4.22 ,it can be inferred that:

- 65% of the participants answered "yes" and believe that reports can be viewed on CPRS.
- 34% of the participants answered "no" and do not believe that reports can be viewed on CPRS.
- 1% of the participants answered "maybe," indicating uncertainty or lack of clarity regarding the viewing of reports on CPRS.

These percentages represent the participants' perceptions and beliefs regarding the ability to view reports on CPRS. The study aims to assess the participants' understanding and awareness of CPRS functionalities related to generating and accessing reports, which play a crucial role in patient care and clinical decision-making.

The majority of participants (65%) expressed confidence in the capability of CPRS to display reports. This suggests that they are aware of the reporting functionalities within the system and acknowledge the importance of accessing and utilizing reports for various purposes such as monitoring patient progress, tracking treatment outcomes, and generating data for research and analysis.

However, a notable proportion of participants (34%) expressed a belief that reports cannot be viewed on CPRS. This may indicate a lack of knowledge or awareness regarding the reporting features and capabilities of CPRS. The participants who responded "maybe" (1%) might have uncertainties or limited familiarity with the specific functionalities related to viewing reports on CPRS.

Through this study, the participants' understanding and awareness of the reporting capabilities of CPRS can be assessed. The findings can inform the development of targeted training programs and interventions to address any knowledge gaps and enhance the participants' proficiency in utilizing CPRS for report generation and access.

23.How much time can you spend every day for training purposes?

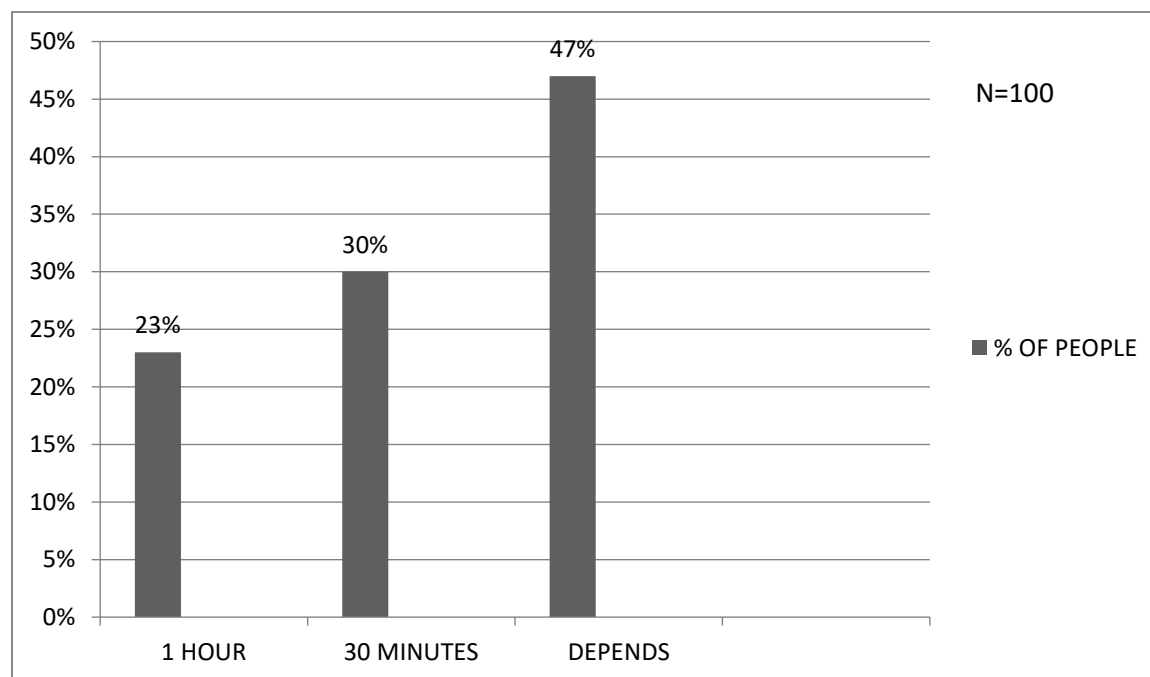


Fig 4.23 Time the respondents can take out for training purpose

From table 4.23 ,_It can be inferred that -

- 23% of the participants answered that they can spend 1 hour daily for training purposes.
- 30% of the participants stated that they can allocate 30 minutes daily for training.
- 47% of the participants mentioned that the amount of time they can spend on training depends, suggesting that their availability varies based on other factors or obligations.

These percentages represent the participants' estimated time commitment for training on CPRS. The study aims to assess the participants' availability and dedication to learning and familiarizing themselves with the functionalities and usage of CPRS.

The findings from this study can inform the design and development of training programs, considering the varying time commitments and availability of participants. By offering flexible training options, such as self-paced modules or brief training sessions, healthcare professionals can engage in training based on their individual preferences and availability.

Major Findings on training need assessment –

- **Knowledge gaps:** The assessment revealed that doctors and nurses have varying levels of knowledge regarding CPRS. Some healthcare professionals lack a comprehensive understanding of CPRS functionalities, data entry protocols, or privacy and security measures.
- **Technical skills gaps:** The assessment found that doctors and nurses had varying levels of technical proficiency in using CPRS. Healthcare professionals struggled with tasks such as navigating the system, locating and interpreting patient information, or inputting data accurately.
- **Workflow integration challenges:** The assessment identified challenges related to integrating CPRS into the existing workflow of doctors and nurses. Healthcare professionals faced difficulties in adapting their practices and routines to incorporate CPRS effectively.
- **Training preferences and learning styles:** The assessment highlighted differences in training preferences and learning styles among doctors and nurses. Some healthcare professionals preferred hands-on practice sessions, while others prefer self-paced online

modules or a combination of different training methods. Recognizing these preferences helps tailor training programs to accommodate diverse learning needs.

- Need for specialized training: The assessment identified the need for specialized training based on healthcare professionals' roles and responsibilities. Doctors and nurses require different levels and types of training based on their specific job functions and clinical specialties.

- ❖ Keeping the Training Need Assessment in mind , the following Training Schedule was finalized :

DAY	TOPIC TO BE COVERED
DAY 1	Introduction and Overview • Introduction to CPRS and its benefits • Understanding the importance of electronic health records • Familiarization with the CPRS interface and navigation • Overview of key functionalities and modules in CPRS
DAY 2	Patient Data Entry and Management • Patient registration and demographic entry • Entering initial assessments, diagnoses, and allergy assessments • Managing and updating patient data in CPRS • Practice exercises and hands-on training on patient data entry
DAY 3	Clinical Documentation and Order Entry • Understanding clinical notes and progress notes in CPRS • Creating and signing notes using electronic signatures • Order entry and management: pharmacy orders, laboratory orders, radiological orders • Using clinical reminders and decision support tools • Practice exercises and hands-on training on clinical documentation and order entry
DAY 4	Viewing and Retrieving Patient Information • Exploring advanced search options for patient retrieval • Accessing patient clinical details and summaries • Reviewing lab results, vitals, and other patient information • Viewing reports and generating patient-specific reports in CPRS
DAY 5	Workflow Optimization and Best Practices • Tips for efficient use of CPRS and time-saving shortcuts • Workflow optimization techniques for improved productivity • Troubleshooting common issues and error handling • Q&A session and interactive discussion on best practices

TABLE 4.0 Training Schedule

Note: The above training schedule is a general guideline and can be customized based on the specific needs and requirements of the medical staff and the organization. It is recommended

to allocate sufficient time for hands-on practice, group discussions, and real-life scenarios to reinforce learning and ensure effective utilization of CPRS.

PRE-TRAINING ASSESSMENT QUESTIONNAIRE RESULT AND ANALYSIS

1. How would you rate your current understanding of CPRS ?

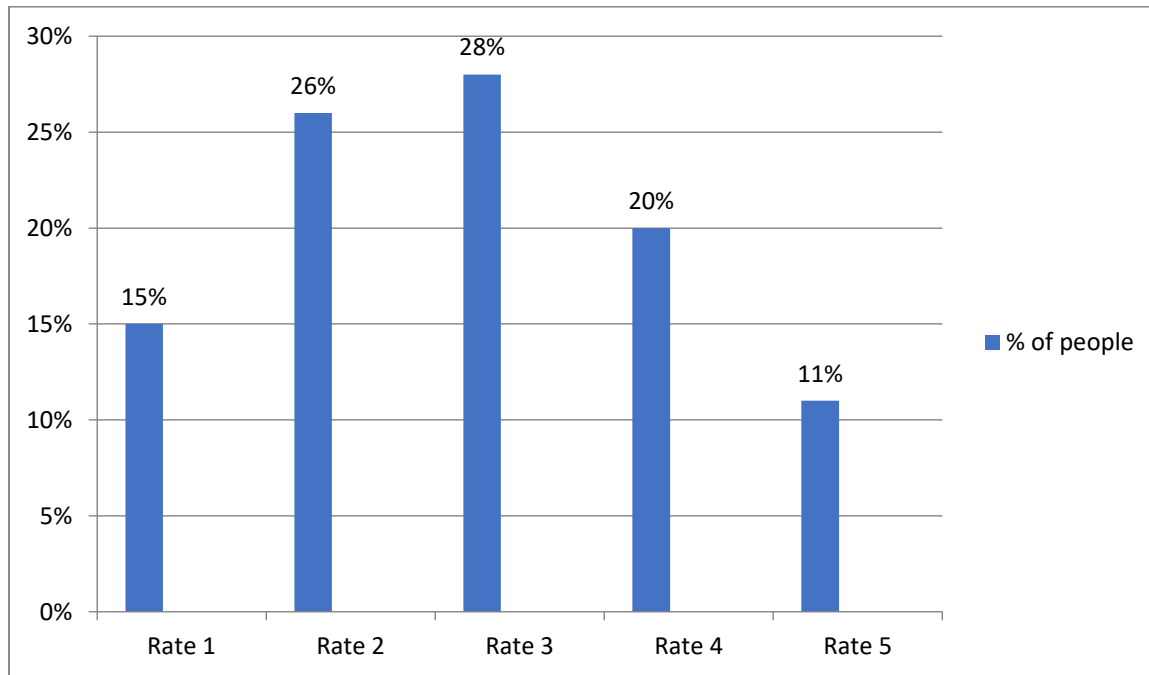


Fig 4.24 Current understanding of respondents on CPRS

From table 4.24 ,it can be inferred that:

- 15% of the participants rated their current understanding of CPRS as 1, indicating a low level of understanding.
- 26% of the participants rated their understanding as 2, suggesting a limited understanding.
- 28% of the participants rated their understanding as 3, indicating a moderate level of understanding.
- 20% of the participants rated their understanding as 4, suggesting a good understanding.
- 11% of the participants rated their understanding as 5, indicating a high level of understanding.

These percentages represent the participants' self-perceived level of understanding of CPRS. The study aims to assess the participants' initial knowledge and comprehension of CPRS before training and evaluate any changes in their understanding after training.

The findings suggest that a significant proportion of participants (41% in total) rated their current understanding as either 1 or 2, indicating a relatively lower level of comprehension. This highlights the need for training and education on CPRS to enhance participants' knowledge and proficiency.

On the other hand, approximately one-third of the participants (28% and 20%) rated their understanding as 3 or 4, indicating a moderate to good level of comprehension. This suggests that a portion of the participants already possess a certain degree of familiarity or experience with CPRS, but further training could still enhance their understanding.

A smaller percentage of participants (11%) rated their understanding as 5, indicating a high level of comprehension. These participants may already have extensive knowledge or experience with CPRS, potentially due to prior training or usage.

The study can use these findings to tailor the training programs to meet the diverse needs of participants based on their initial understanding. By addressing the knowledge gaps identified through self-assessment, healthcare professionals can gain a more comprehensive understanding of CPRS and its functionalities, leading to improved utilization and better patient care outcomes.

2. How much experience do you have with an electronic health record ?

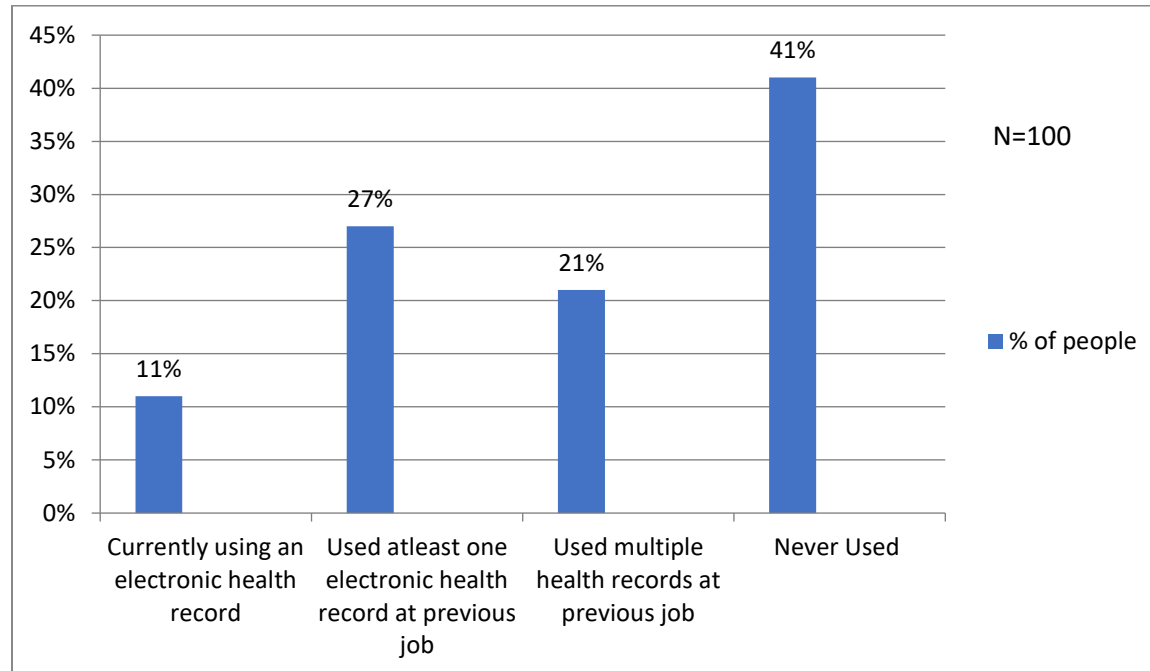


Fig 4.25 Experience of respondents with CPRS

From table 4.25, it can be inferred that:

- 11% of the participants currently use an electronic health record, indicating they have hands-on experience and are actively using EHR in their current job.
- 27% of the participants have used at least one electronic health record in a previous job, suggesting they have prior experience with EHR systems but may not be currently using them.
- 21% of the participants have used multiple electronic health records at previous jobs, indicating they have experience with different EHR systems from their previous employment.
- 41% of the participants have never used an electronic health record, indicating a lack of prior experience with EHR systems.

These percentages represent the participants' self-reported experience with electronic health records. The study aims to assess the participants' level of familiarity with EHRs to determine the training needs and evaluate the impact of training on their proficiency with CPRS.

The findings suggest that a significant proportion of participants (41%) have never used an electronic health record before. This indicates a lack of prior exposure to EHR systems and highlights the importance of providing comprehensive training to ensure participants are equipped with the necessary skills to effectively use CPRS.

On the other hand, a smaller percentage of participants (11%) are currently using an electronic health record, suggesting they already have hands-on experience with EHR systems. These participants may require a different level or type of training that focuses on the specific features and functionalities of CPRS to effectively transition from their current EHR system.

The participants who have used at least one or multiple electronic health records at previous jobs (27% and 21% respectively) have some level of familiarity with EHR systems. Their prior experience can serve as a foundation for learning and adapting to CPRS, potentially enabling a smoother training process.

Overall, the study can address the varying levels of experience by providing comprehensive training that caters to participants' specific needs and aligns with their prior exposure to electronic health records. By doing so, healthcare professionals can enhance their skills and proficiency in using CPRS, leading to improved patient care and outcomes.

3. How would you rate your confidence with a computer ?

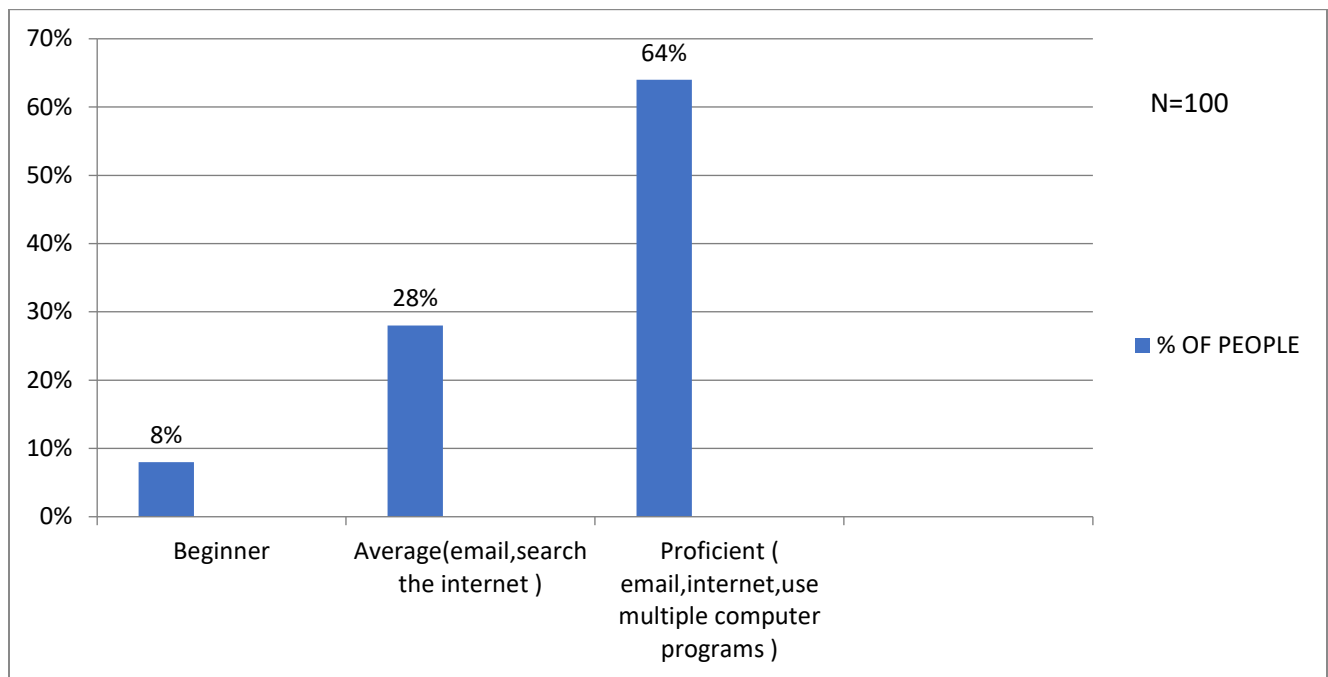


Fig 4.26 Confidence of respondents with computers

From table 4.26, it can be inferred that:

- 8% of the participants consider themselves as beginners when it comes to using a computer, suggesting they have limited experience and confidence in computer usage.
- 28% of the participants rate themselves as average in computer usage, indicating they have basic skills such as email and internet browsing.
- 64% of the participants consider themselves proficient in computer usage, including email, internet browsing, and the ability to use multiple computer programs. This suggests they have a higher level of confidence and experience in working with computers.

These percentages represent the participants' self-assessment of their computer skills and confidence. The study aims to assess participants' computer literacy as it relates to their training needs for using CPRS effectively.

4. Full form of CPRS is -

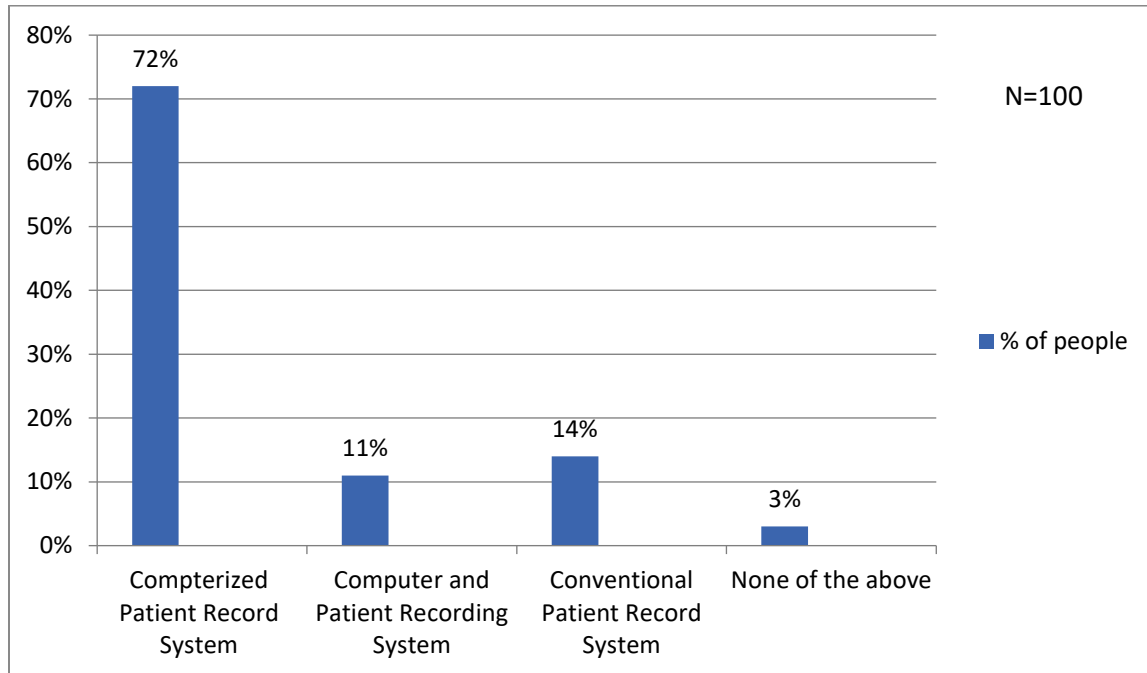


Fig 4.27 Knowledge about full form of CPRS

From table 4.27, it can be inferred that:

- 72% of the participants correctly identified the full form of CPRS as "Computerized Patient Record System." This indicates a majority of participants are aware that CPRS stands for Computerized Patient Record System, which aligns with the purpose and focus of the study.
- 11% of the participants chose "Computer and Patient Recording System" as the full form of CPRS. This response indicates some confusion or misunderstanding about the acronym.
- 14% of the participants selected "Conventional Patient Record System" as the full form of CPRS, which does not align with the intended meaning.
- 3% of the participants answered "None of the Above," suggesting they do not know or are unsure about the correct expansion of CPRS.

Overall, the findings indicate that while the majority of participants are familiar with the full form of CPRS as the Computerized Patient Record System, there is still a need to address any confusion or misconceptions among a significant portion of the participants. By providing clear

and consistent information, the study can ensure that all participants have a common understanding of the acronym and its relevance to their training and practice.

5. CPRS implementation will help in -

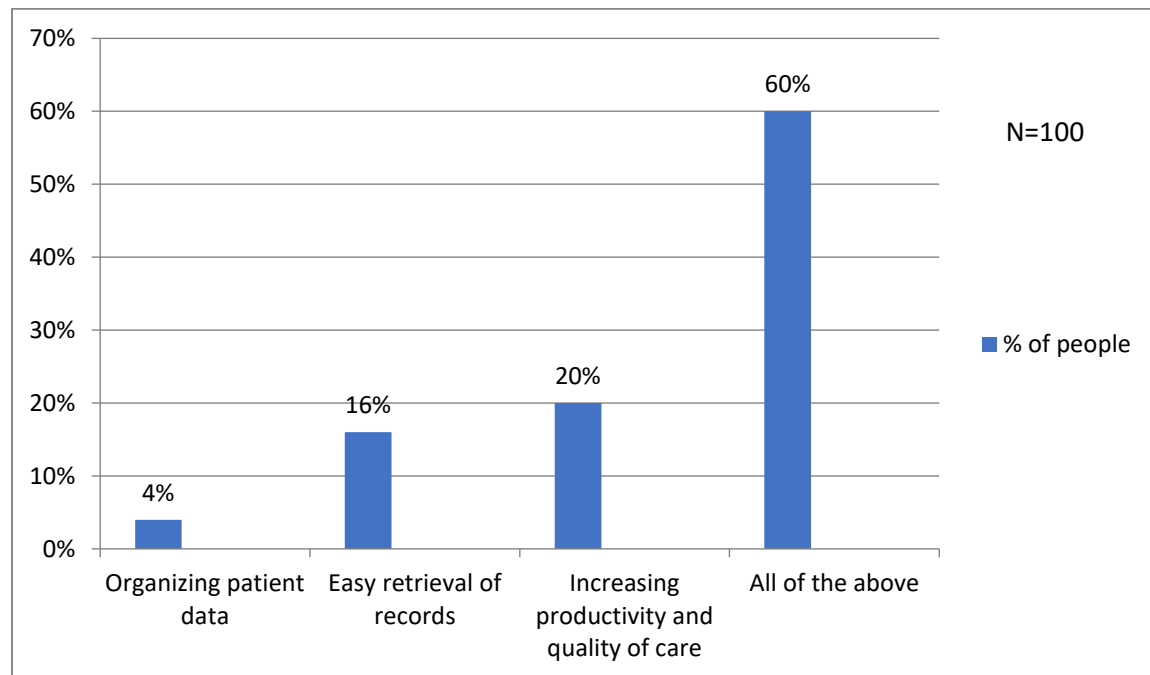


Fig 4.28 Knowledge about benefits of CPRS

From table 4.28, it can be inferred that:

- 4% of the participants selected "Organizing Patient Data" as a benefit of CPRS implementation. This indicates a small percentage of participants recognize the potential for CPRS to help organize patient data.
- 16% of the participants chose "Easy Retrieval of Records" as a benefit of CPRS implementation. This suggests that a portion of the participants believes that CPRS can facilitate quick and efficient access to patient records.
- 20% of the participants selected "Increasing Productivity and Quality of Care" as a benefit of CPRS implementation. This response suggests that a significant percentage of participants perceive CPRS as a tool that can enhance both productivity and the quality of care provided to patients.

- 60% of the participants answered "All of the Above," indicating that the majority of participants recognize the potential benefits of CPRS implementation in terms of organizing patient data, easy retrieval of records, and increasing productivity and quality of care.

Overall, the findings suggest that the majority of participants recognize the comprehensive benefits that can be achieved through CPRS implementation. This awareness can serve as a foundation for successful adoption and utilization of CPRS in healthcare settings, ultimately leading to improved patient care outcomes.

6. Patients can be searched through -

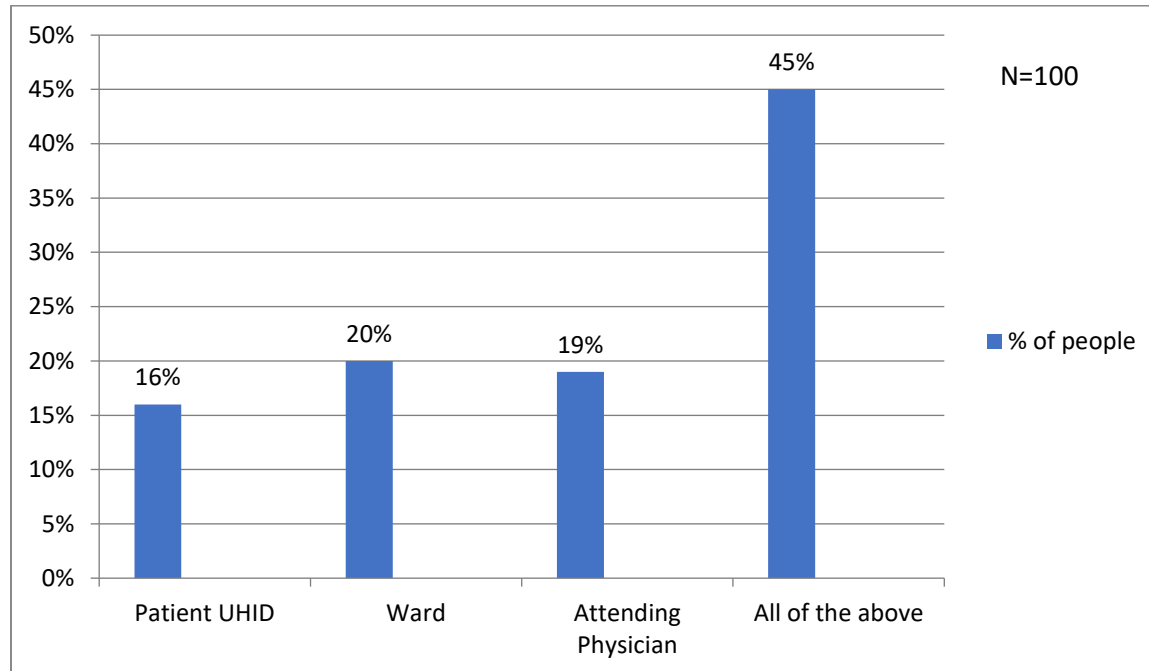


Fig 4.29 Knowledge about the way in which patients can be searched

From table 4.29 , it can be inferred that:

- 16% of the participants selected "Patient UHID" as a search criteria.
- 20% of the participants chose "Ward" as a search criteria.
- 19% of the participants selected "Attending Physician" as a search criteria.
- 45% of the participants answered "All of the above," indicating that the majority of participants understand that CPRS provides multiple search options, including Patient UHID, Ward, and Attending Physician.

These percentages reflect the participants' understanding of the search criteria available in CPRS. The majority of participants (45%) are aware that patients can be searched using any combination of the provided options, including Patient UHID, Ward, and Attending Physician. This suggests that the participants have a comprehensive understanding of the search capabilities of CPRS and are familiar with the various criteria that can be used to locate patients within the system.

Overall, the participants' awareness of the various search criteria in CPRS indicates a solid understanding of how to navigate and retrieve patient information from the system. This knowledge is essential for healthcare professionals to efficiently locate and access the necessary patient data, ensuring timely and effective care delivery.

7. Initial Assessment should be filled before -

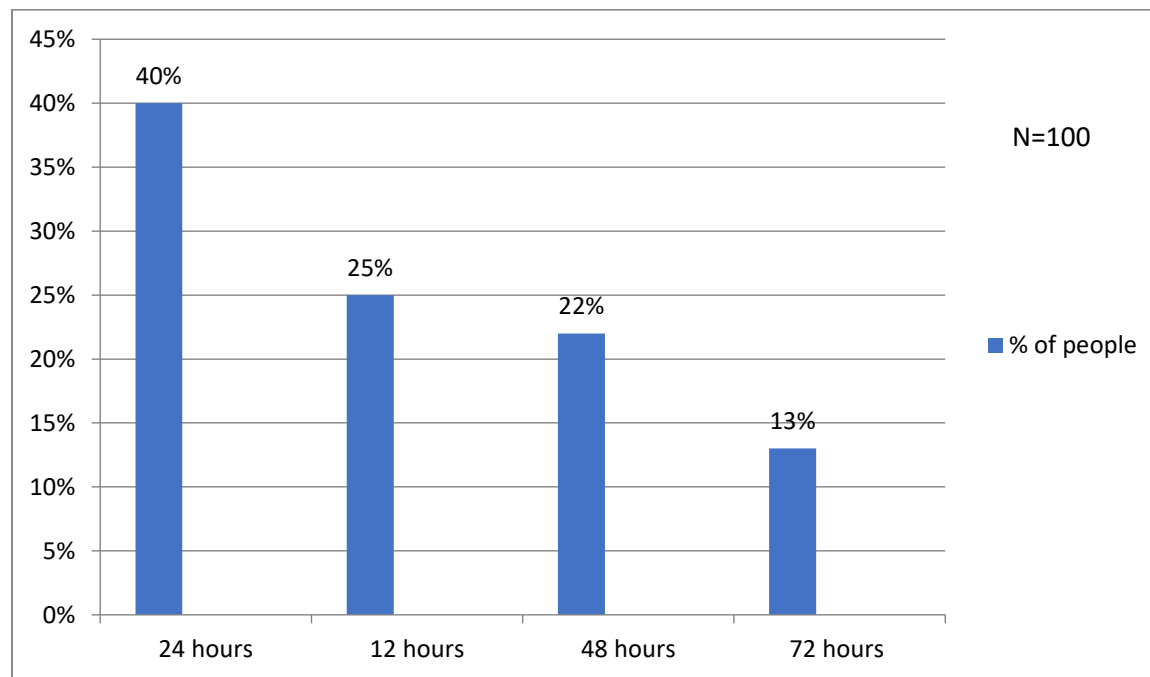


Fig 4.30 Awareness about the time of initial assessment

From table 4.30 ,it can be inferred that:

- 40% of the participants believe that the initial assessment should be filled before 24 hours. This suggests that a significant proportion of participants consider a 24-hour time frame as appropriate for completing and recording the initial assessment in CPRS.
- 25% of the participants selected 12 hours as the time frame for completing the initial assessment. This indicates that a portion of the participants believe the assessment should be completed within 12 hours of a patient's admission or encounter.
- 22% of the participants believe that the initial assessment should be filled before 48 hours. This suggests that a significant proportion of participants consider a 48-hour time frame as appropriate for completing and recording the initial assessment in CPRS.

- 13% of the participants selected 72 hours as the time frame for completing the initial assessment. This indicates that a small percentage of participants believe the assessment should be completed within 72 hours of a patient's admission or encounter.

These percentages reflect the participants' perceptions of the time frame within which the initial assessment should be completed and recorded in CPRS. The majority of participants (40%) consider completing the initial assessment within 24 hours as appropriate.

8. You can take the consent of a patient on CPRS as well, manual records are not necessary, True or False?

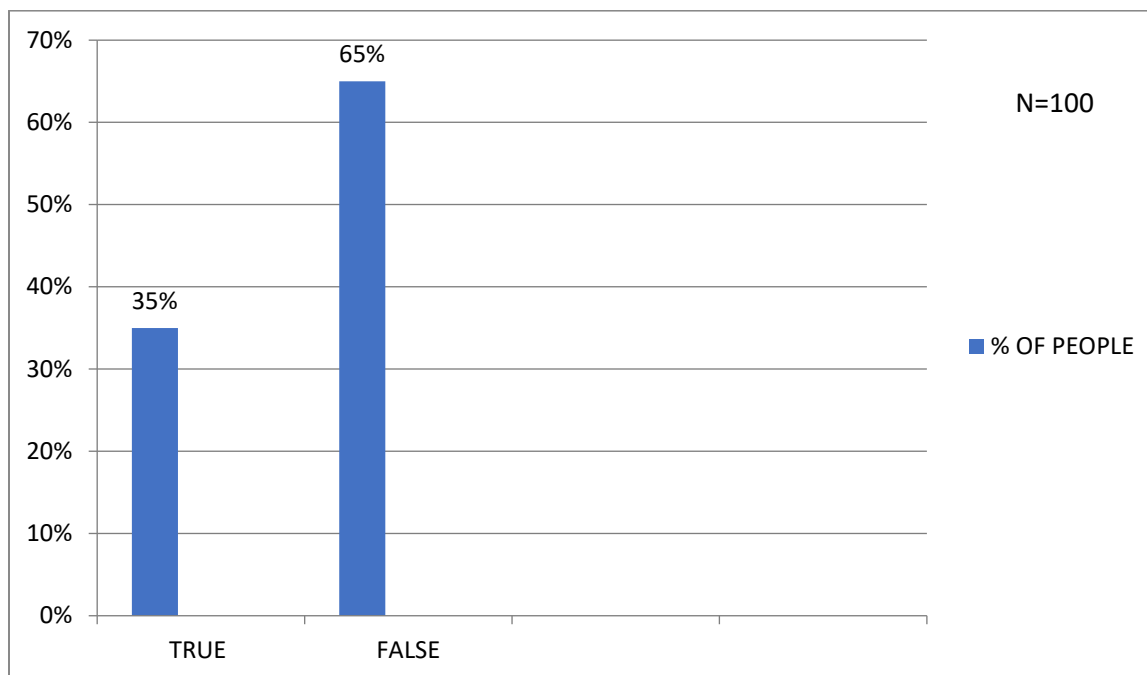


Fig 4.31 Awareness about filling of consent form

From table 4.31 ,it can be inferred that:

- 65% of the participants selected "false," indicating that they believe manual records are still necessary to obtain patient consent.
- 35% of the participants selected "true," suggesting that they believe patient consent can be effectively obtained solely through CPRS without the need for manual records.

9. Discontinue Order functionality is used to discontinue the active, pending, and unreleased order. True or False?

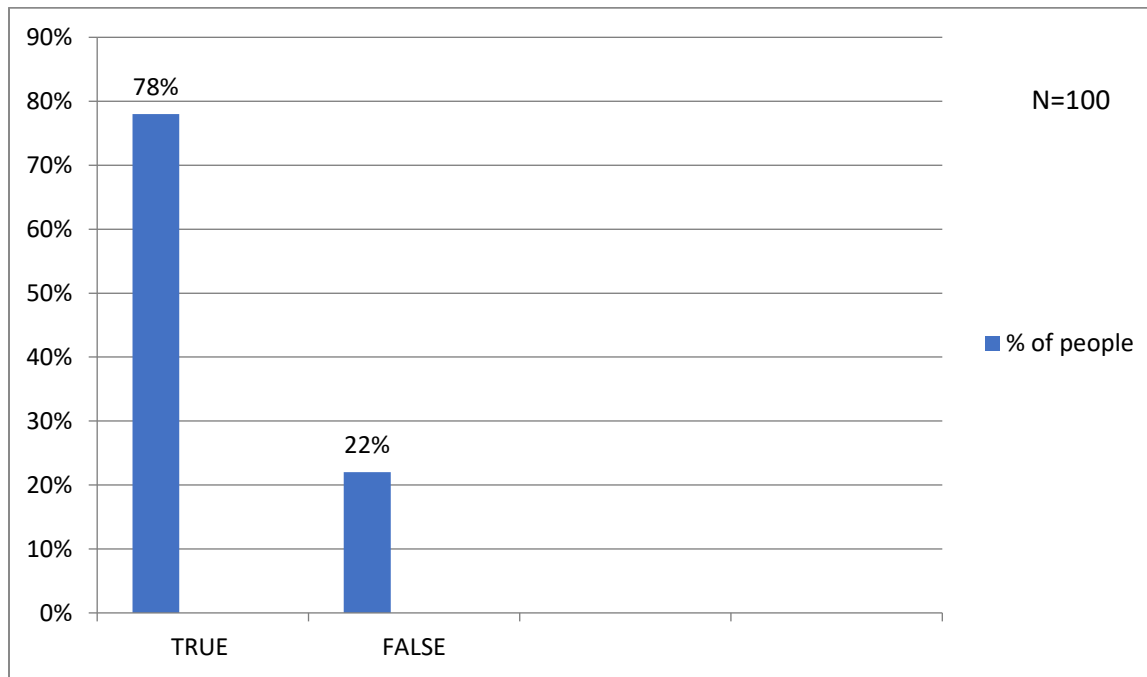


Fig 4.32 Awareness about Discontinue order functionality

From table 4.32 , it can be inferred that -

- 78% of the participants selected "true," indicating that they believe the "Discontinue Order" functionality in CPRS is indeed used to discontinue active, pending, and unreleased orders. This suggests that a majority of participants have an understanding that the feature enables the discontinuation of various types of orders within CPRS.
- 22% of the participants selected "false," suggesting that they do not believe the "Discontinue Order" functionality in CPRS is used for discontinuing active, pending, and unreleased orders. This indicates that a smaller proportion of participants may have a different understanding of the purpose or limitations of the "Discontinue Order" feature in CPRS.

The majority of participants (78%) believe that the "Discontinue Order" functionality in CPRS is used to discontinue active, pending, and unreleased orders, aligning with the intended purpose of the feature. However, a notable minority (22%) holds a different perspective. Understanding the

reasons behind these differing views can provide valuable insights for optimizing the training and utilization of CPRS within healthcare settings.

10. Electronic signatures are of great importance if you wish to place and order, sign a note, create a discharge summary. True or False?

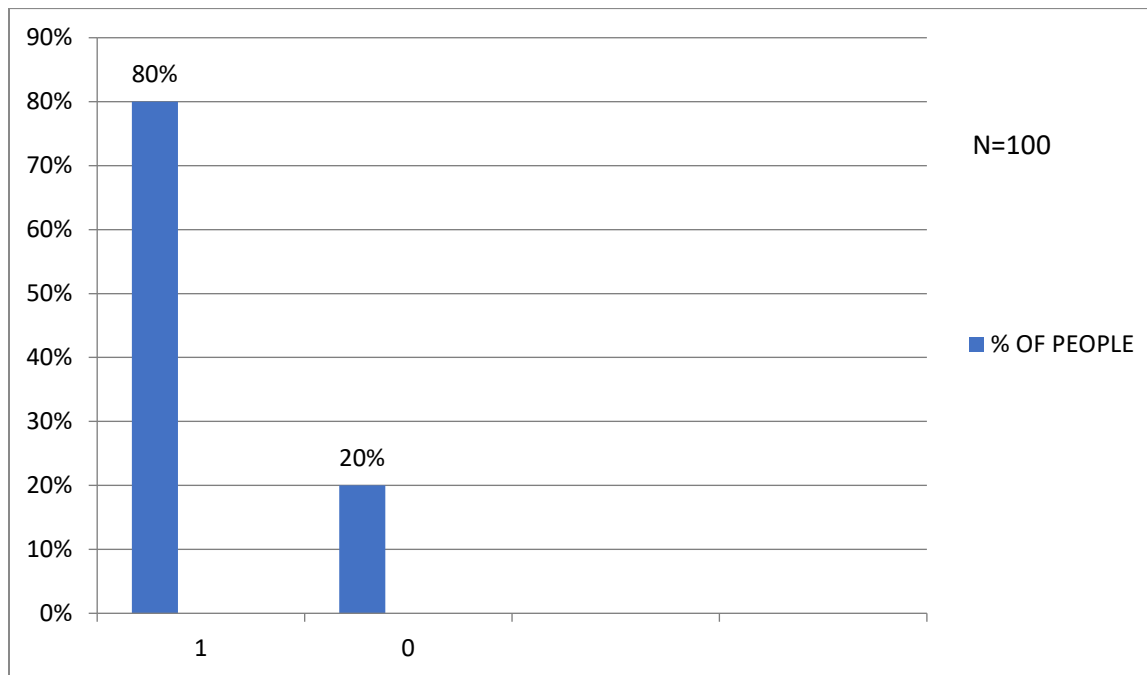


Fig 4.33 Awareness about electronic signatures

From table 4.33 ,it can be inferred that:

- 80% of the participants selected "true," indicating that they believe electronic signatures are indeed important when placing an order, signing a note, and creating a discharge summary within CPRS. This suggests that the majority of participants recognize the significance of electronic signatures in these specific actions, highlighting the importance of authentication and documentation within the CPRS system.
- 20% of the participants selected "false," suggesting that they do not believe electronic signatures are necessary for these activities within CPRS. This indicates that a smaller proportion of participants may have a different understanding or perspective on the importance of electronic signatures in relation to order placement, note signing, and discharge summary creation.

It is important to further investigate the reasons behind the participants' responses and their understanding of the role of electronic signatures in CPRS. Clear communication and training on the importance and proper utilization of electronic signatures can help ensure compliance and adherence to legal and documentation standards within healthcare settings.

POST-TRAINING ASSESSMENT QUESTIONNAIRE RESULTS

1. Did the training meet your expectations ?

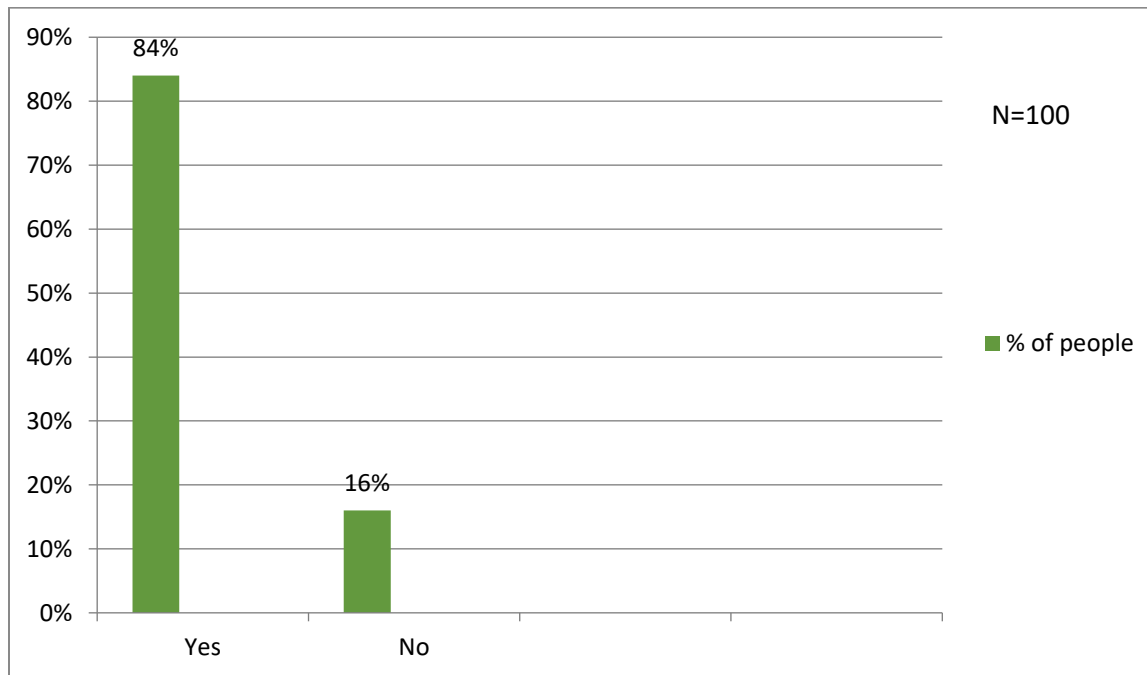


Fig 4.34 Experience of the users on training

From table 4.34 , it can be inferred that:

- 84% of the participants responded with "yes," indicating that the training met their expectations. This majority suggests that a significant portion of the participants felt that the training on CPRS adequately fulfilled their anticipated requirements. Their positive response suggests that they found the training to be comprehensive, informative, and valuable in preparing them for using CPRS effectively in their professional roles.
- 16% of the participants responded with "no," indicating that the training did not meet their expectations. This minority indicates that a smaller proportion of the participants expressed dissatisfaction with the training they received. Their negative response

suggests that they may have felt that the training lacked certain elements, was insufficient in terms of content or duration, or did not adequately address their specific needs or concerns related to CPRS.

2. Given the material covered , the length of the training was -

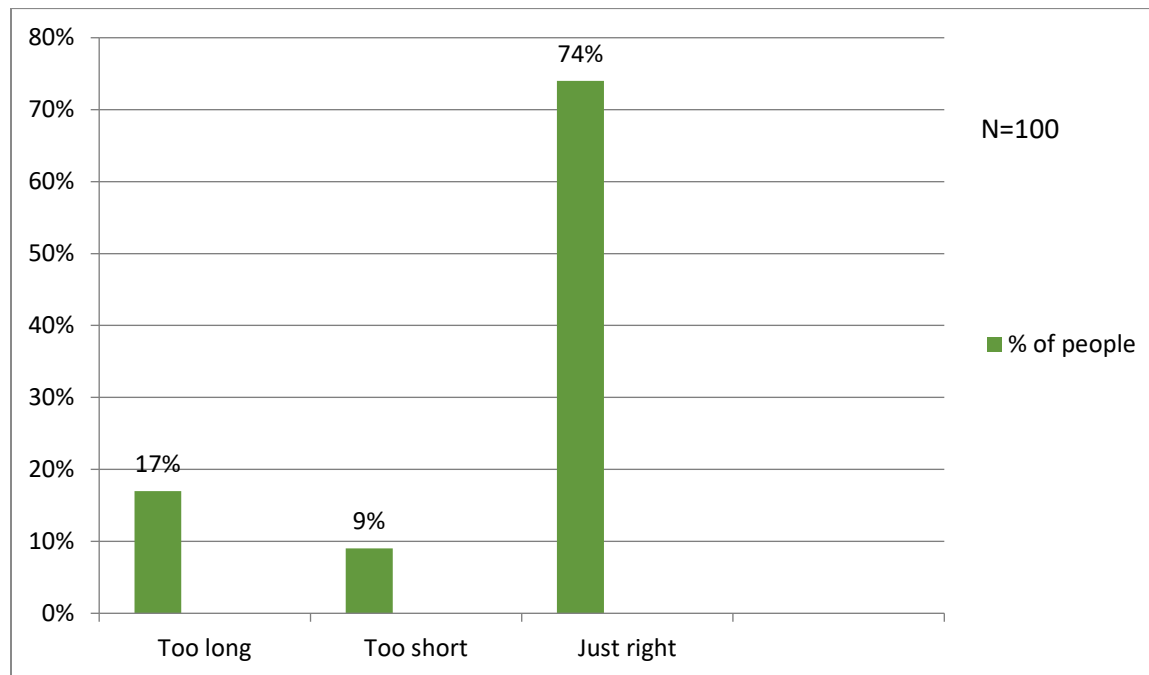


Fig 4.35 Feedback on length of training

From table 4.35 , it can be inferred that:

- 17% of the participants responded with "too long," indicating that they felt the training duration exceeded what they considered necessary or appropriate for covering the material on CPRS. This minority suggests that a small portion of participants may have found the training sessions to be lengthy, potentially leading to boredom, reduced engagement, or difficulty in retaining information.
- 9% of the participants responded with "too short," suggesting that they believed the training duration was insufficient to adequately cover the material on CPRS. This minority indicates that a smaller proportion of participants may have felt that the training sessions were rushed, lacking in-depth exploration of important topics or hands-on practice.

- 74% of the participants responded with "just right," indicating that they perceived the training length as appropriate and well-balanced with the material covered. This majority suggests that the majority of participants found the training sessions to be adequately timed, allowing for thorough coverage of the CPRS-related content without being excessively long or too brief.

By taking into account the feedback from participants across different categories, training organizers can fine-tune the training duration to ensure that it meets the needs and expectations of the majority while addressing the concerns of those who felt it was either too long or too short. This iterative approach can lead to a more effective and balanced training program that optimizes learning outcomes and participant satisfaction.

3. How would you rate the overall quality of the training ?

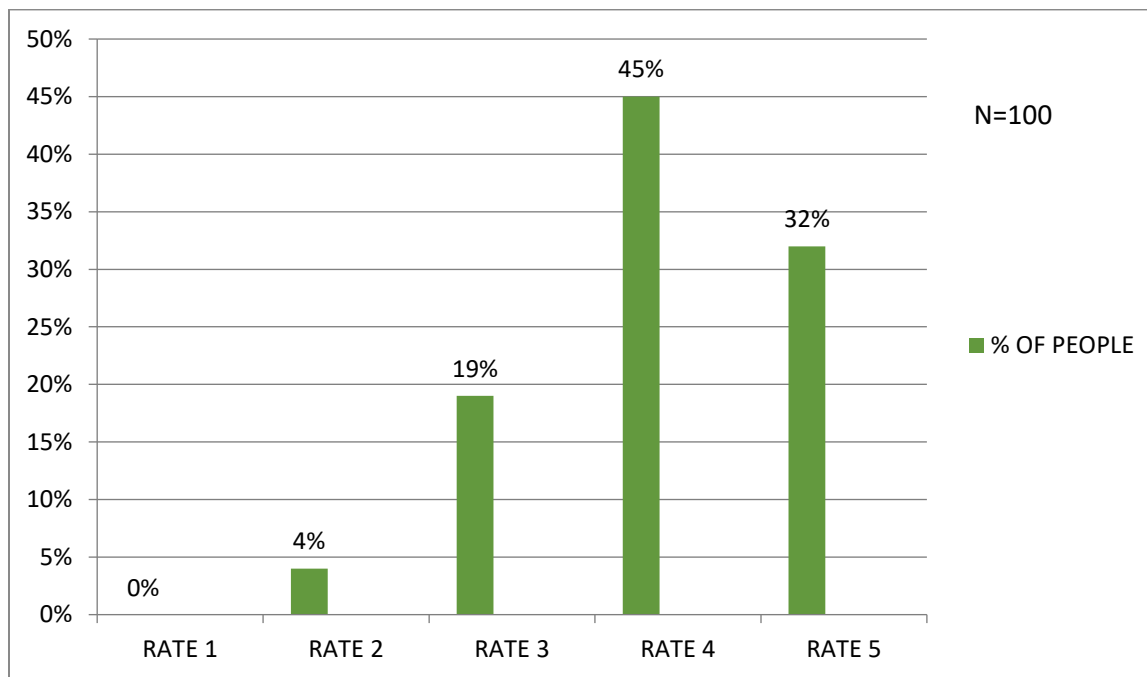


Fig 4.36 Rating of overall quality of training

From table 4.36 ,it can be inferred that:

- 0% of the participants responded with "Rate 1," indicating that none of the participants rated the overall quality of the training as the lowest possible rating. This suggests that none of the participants found the training to be of extremely poor quality.

- 4% of the participants responded with "Rate 2," suggesting that a small proportion of participants rated the overall quality of the training as relatively low. This indicates that a minority of participants may have had some concerns or reservations about certain aspects of the training.
- 19% of the participants responded with "Rate 3," indicating that a considerable portion of participants assessed the overall quality of the training as average. This suggests that these participants neither found the training to be exceptionally good nor significantly lacking in quality, indicating a neutral or moderate perception.
- 45% of the participants responded with "Rate 4," suggesting that a large majority of participants rated the overall quality of the training as relatively high. This indicates that most participants found the training to be of good quality, meeting their expectations and providing them with valuable knowledge and skills.
- 32% of the participants responded with "Rate 5," indicating that a significant proportion of participants rated the overall quality of the training as the highest possible rating. This suggests that a notable number of participants highly appreciated the training, considering it to be of excellent quality and meeting or exceeding their expectations.

Considering these responses, it can be concluded that the majority of participants (77%) rated the overall quality of the training as either good (Rate 4) or excellent (Rate 5). This indicates that the training program was generally well-received, meeting the participants' expectations and providing them with a positive learning experience.

4. You can search for a patient through advance search option by entering any of these fields -

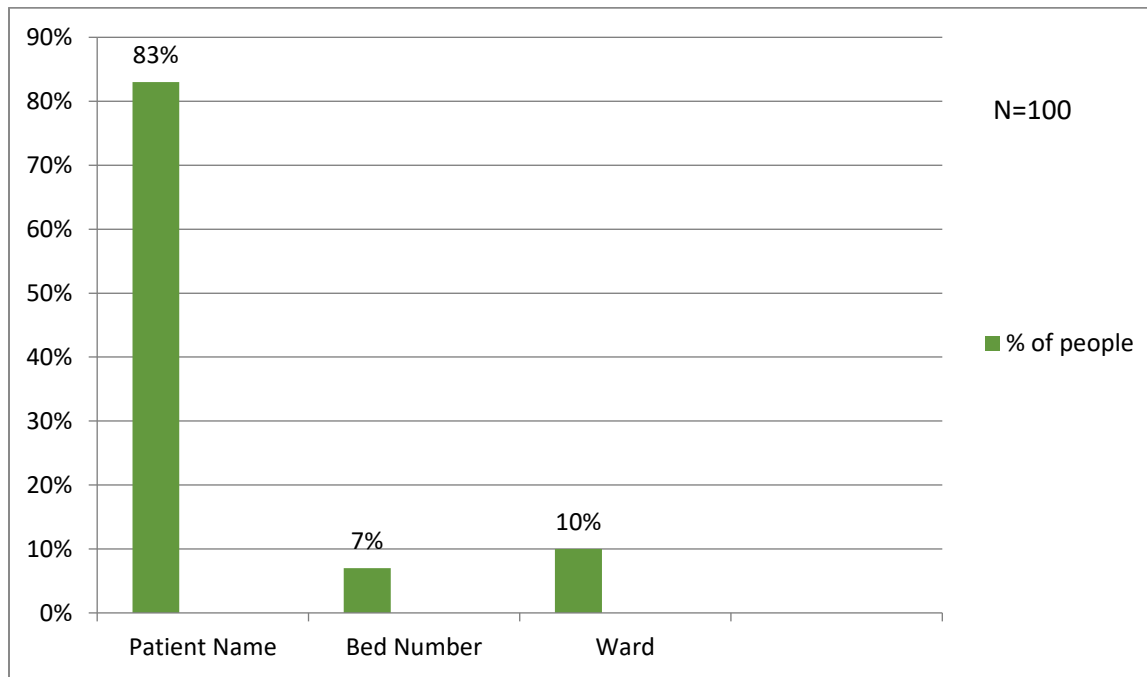


Fig 4.37 Awareness about advance search option on CPRS

From table 4.37 , it can be inferred that:

- 83% of the participants responded with "Patient Name," indicating that the majority of participants are aware that they can search for a patient by entering the patient's name. This suggests that participants understand the importance of the patient's name as a key identifier and are familiar with using it to search for specific patient records.
- 7% of the participants responded with "Bed Number," indicating that a small proportion of participants are aware that they can search for a patient by entering the bed number associated with the patient. This suggests that while a minority of participants are aware of this search option, it is still a valid field that can be used for patient search in CPRS.
- 10% of the participants responded with "Ward," indicating that another minority of participants are aware that they can search for a patient by entering the ward where the patient is located. This suggests that participants recognize the ward as a relevant field for patient search, allowing them to narrow down their search to a specific location within the healthcare facility.

5. Which functionality can be used to view the patient short clinical details like complains, vitals, allergy etc. . ?

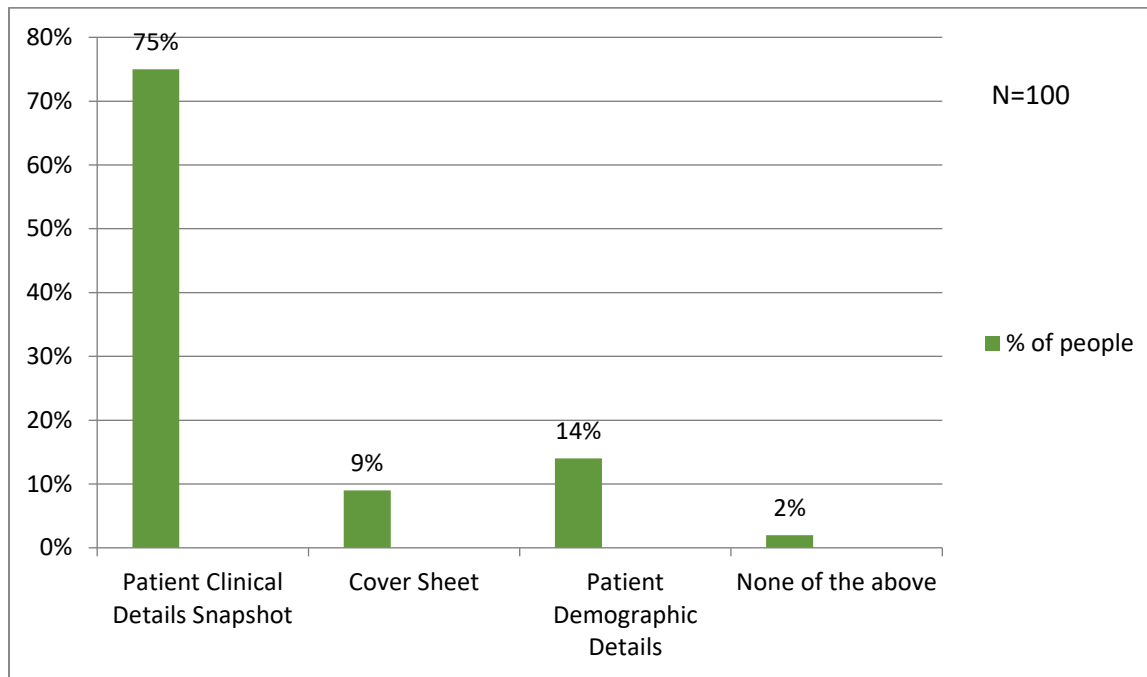


Fig 4.38 Awareness about patient clinical details snapshot functionality

From table 4.38 , it can be inferred that:

- 75% of the participants responded with "Patient Clinical Details Snapshot," indicating that the majority of participants are aware that this functionality can be used to view the patient's short clinical details. This suggests that participants understand the purpose of the Patient Clinical Details Snapshot feature and its relevance in providing a concise overview of the patient's clinical information.
- 9% of the participants responded with "Cover Sheet"
- 14% of the participants responded with "Patient Demographic Details," which is not directly related to viewing the patient's short clinical details. This suggests that a minority of participants may have misunderstood the question or were not aware of the specific functionality for viewing clinical details.
- 2% of the participants responded with "None of the Above," indicating a very small proportion of participants who were not familiar with any of the mentioned functionalities for accessing patient clinical details.

6. Patients can be searched through -

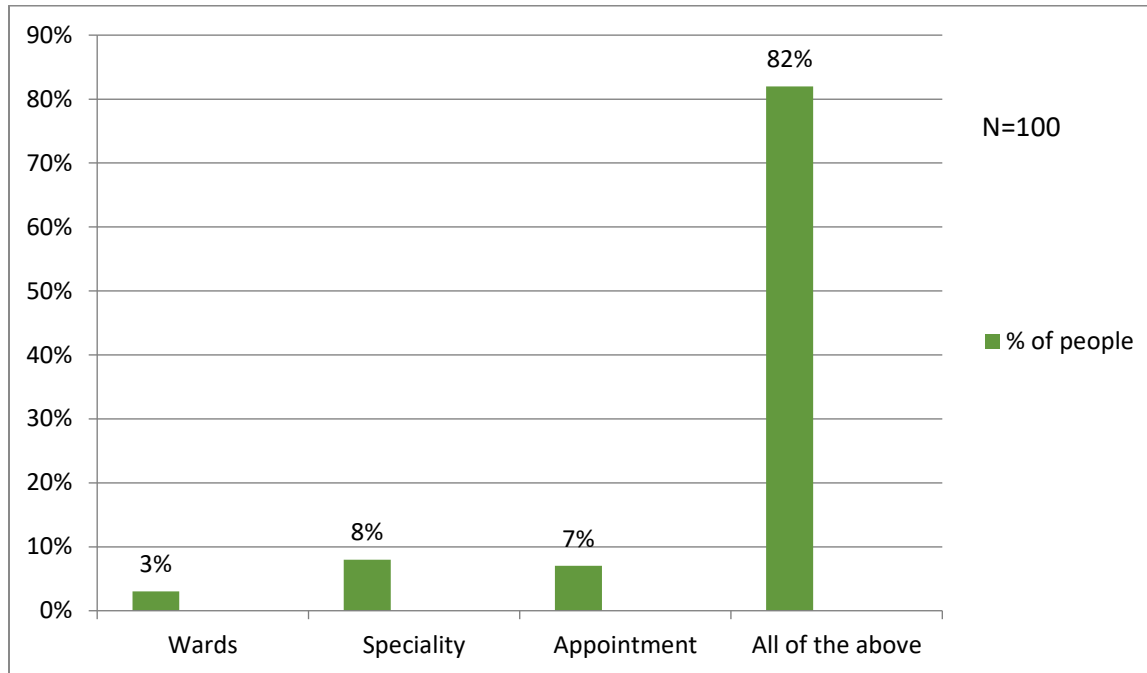


Fig 4.39 Awareness about searching of a patient

From tale 4.39 , it can be inferred that:

- 2% of the participants responded with "Wards," indicating that a small proportion of participants are aware that patients can be searched through specific wards in CPRS. This suggests that some participants recognize the option to search for patients based on the ward they are admitted to.
- 8% of the participants responded with "Specialty," indicating that another small proportion of participants are aware that patients can be searched based on their specialty or medical condition. This suggests that these participants understand the option to filter patients based on specific medical specialties or conditions.
- 7% of the participants responded with "Appointment," indicating that a minority of participants are aware that patients can be searched based on their scheduled appointments. This suggests that some participants recognize the option to search for patients based on their upcoming or past appointments.
- 82% of the participants responded with "All of the Above," indicating that the majority of participants are aware that patients can be searched through all the mentioned options,

including wards, specialties, and appointments. This suggests that these participants have a comprehensive understanding of the various search options available in CPRS and recognize that all of them can be used to find patients.

7. “New Notes” functionality is used to create new notes. True or False?

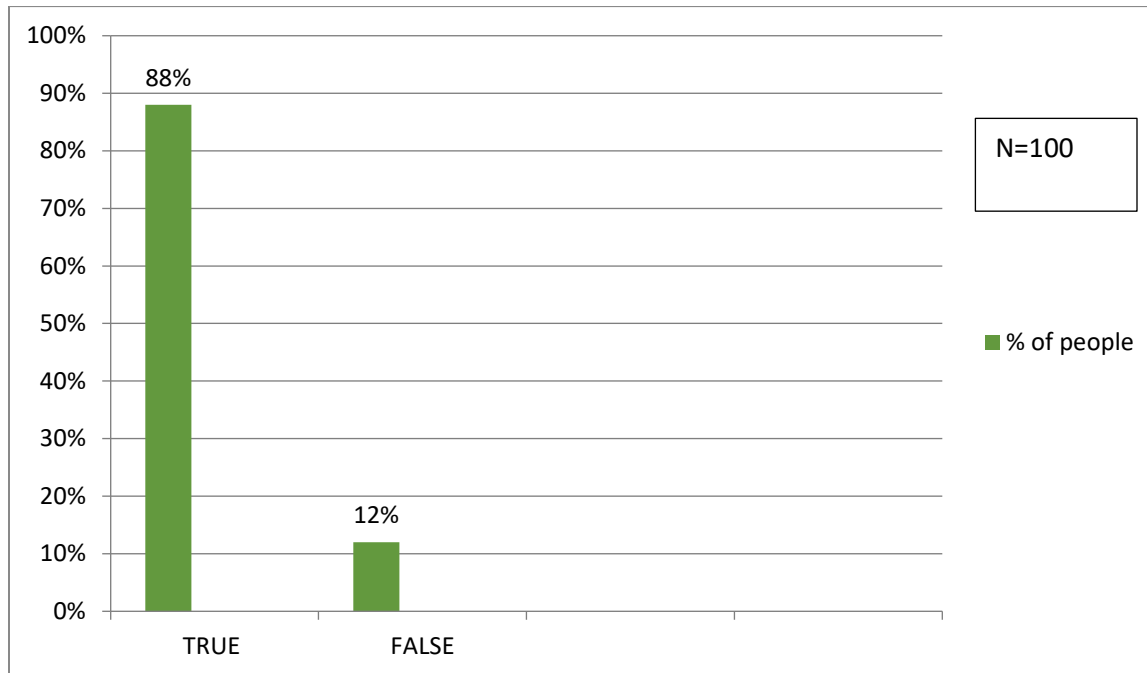


Fig 4.40 Awareness about new notes functionality

From table 4.40 , it can be inferred that:

- 88% of the participants responded with "True," indicating that the majority of participants understand that the "New Notes" functionality is used to create new notes in CPRS. This suggests that these participants are aware of the purpose and functionality of the "New Notes" feature in the system.
- 12% of the participants responded with "False," suggesting that a smaller proportion of participants may have some misconceptions or lack clarity regarding the functionality of the "New Notes" feature in CPRS.

8. Maximum how many parameters can be viewed on a single multiple vital graphs ?

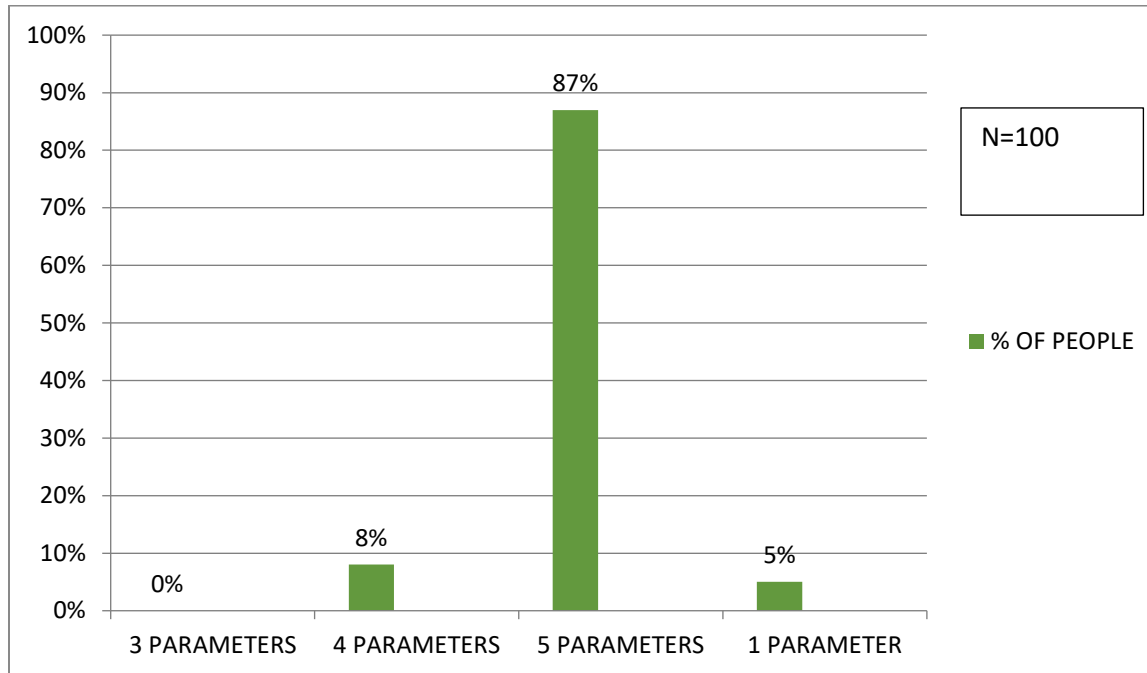


Fig 4.41 Awareness about multiple parameter graph

INFERENCE – The table 4.41 depicts that –

- participants responded with "5," indicating that the majority of participants believe that a single multiple vital graph in CPRS can display up to five parameters. This suggests that these participants are aware that CPRS allows viewing multiple vital signs parameters simultaneously on a single graph.
- 8% of the participants responded with "4," suggesting that a smaller proportion of participants may believe that only four parameters can be viewed on a single multiple vital graph in CPRS.
- 3% of the participants responded with "1," indicating that a few participants may have the misconception that only one parameter can be displayed on a single multiple vital graph.
- 2% of the participants responded with "3," suggesting that a very small percentage of participants may believe that three parameters are the maximum that can be viewed on a single multiple vital graph in CPRS.

9. It is mandatory to fill the Initial Assessment and VTE Risk Assessment within ?

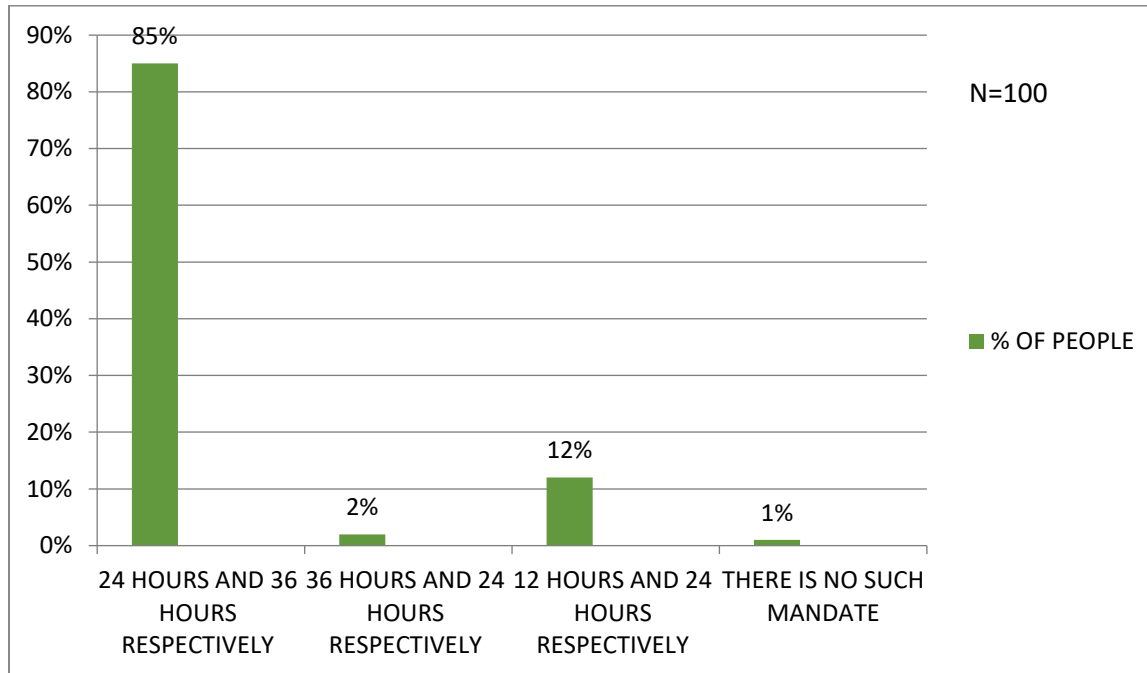


Fig 4.42 Awareness about VTE Risk Assessment Time

From table 4.42 , it can be inferred that:

- 85% of the participants responded with "for 24 hours and 36 hours respectively." This suggests that the majority of participants recognize the requirement to complete the Initial Assessment within 24 hours and the VTE Risk Assessment within 36 hours in CPRS. These participants are aware of the specific timeframes for these assessments as per the study or the established protocols in their healthcare setting.
- 2% of the participants responded with "for 36 hours and 24 hours respectively." This indicates a small percentage of participants may have mistakenly swapped the timeframes for the Initial Assessment and VTE Risk Assessment.
- 12% of the participants responded with "for 12 hours and 24 hours respectively." This suggests that a portion of participants may have misunderstood or have different knowledge regarding the mandatory timeframes for these assessments.
- 1% of the participants responded with "There is no such mandate." This indicates a minority of participants who believe that there are no specific time requirements for completing the Initial Assessment and VTE .

Overall, the study indicates that most participants have an understanding of the mandatory timeframes for the Initial Assessment and VTE Risk Assessment in CPRS. By reinforcing this understanding through training and education, healthcare professionals can ensure compliance with these requirements and enhance patient safety and quality of care.

10. Did the training help you in gaining appropriate skills and knowledge ?

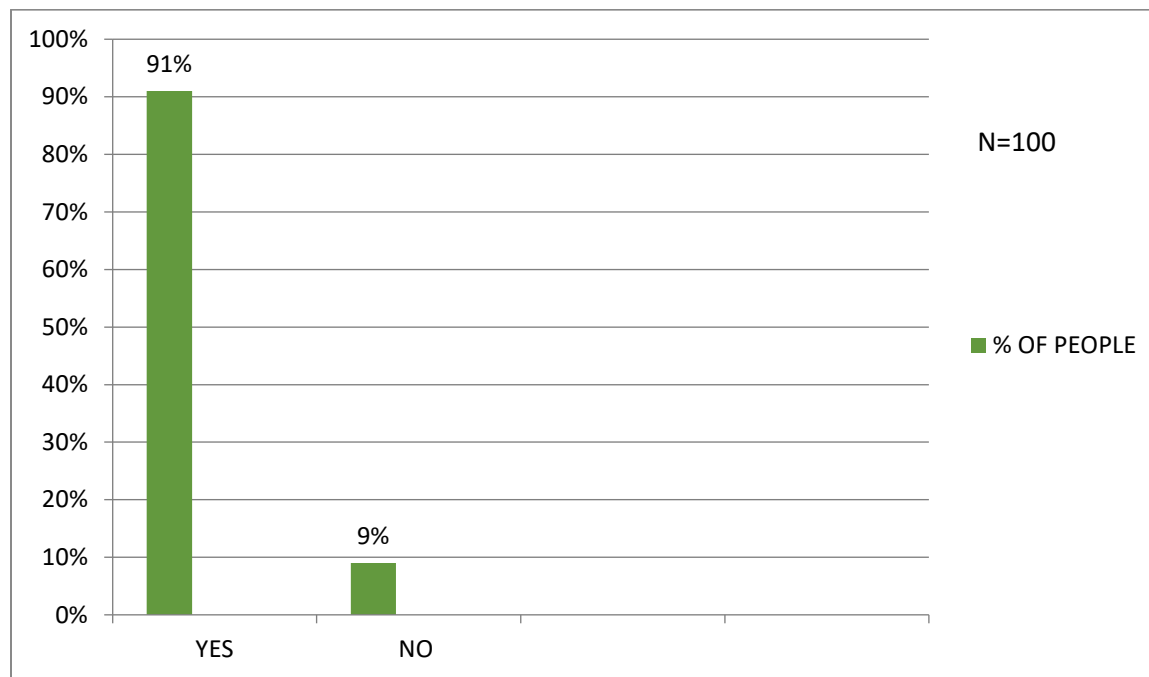


Fig 4.43 Feedback on whether the training helped the users

- From table 4.43 , it can be inferred that 91% of the participants responded with "yes." This suggests that the majority of participants agree with the statement or have a positive response to it. The specific statement is not mentioned, but it can be assumed that it pertains to a question or assertion related to the training needs assessment or the evaluation of the CPRS system. The participants who responded positively may indicate satisfaction with the training or a positive perception of the benefits of using CPRS.
- 9% of the participants responded with "no." This indicates a smaller percentage of participants who disagree with the statement or have a negative response. Again, without the specific statement mentioned, it is unclear what aspect the participants are expressing

disagreement with. It could be related to the training needs assessment, the evaluation of CPRS, or any other topic covered in the study.

- ❖ Based on these responses, it can be concluded that the majority of participants (91%) have a positive response or agree with the statement, while a smaller percentage (9%) have a negative response or disagree. This suggests that the majority of participants perceive the training or CPRS system positively, while a minority may have reservations or concerns.

Finally , it can be inferred that ,

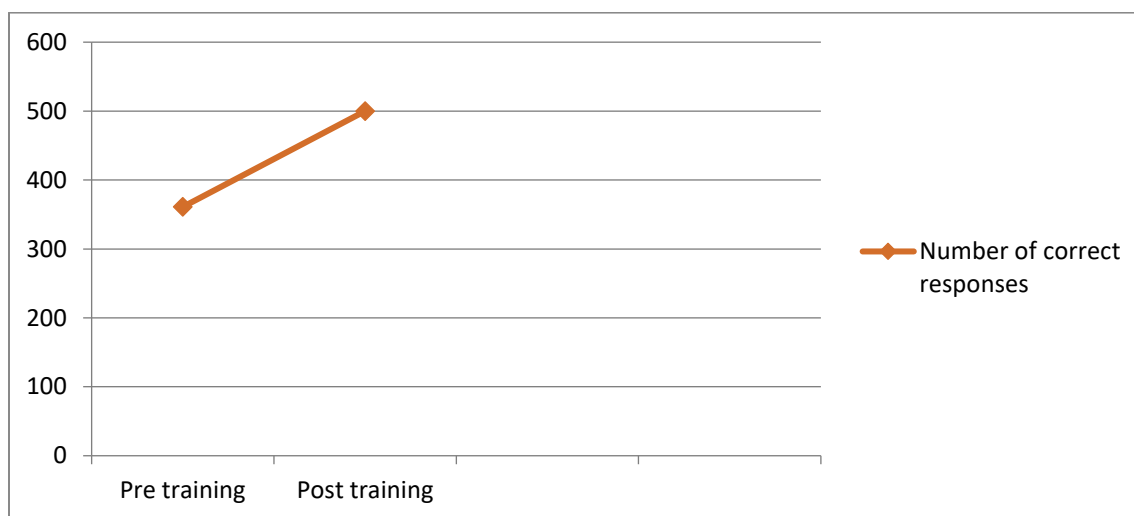


Fig 4.44 Increase in number of correct responses pre training vs post training

Table 4.44 indicates that in the pre-training evaluation, the number of correct responses was 361. This suggests that before undergoing the training, the participants had a certain level of knowledge or understanding of CPRS, as reflected in their correct responses.

Following the completion of the training, the post-training evaluation recorded an increase in the number of correct answers to 500. This indicates that after undergoing the training, the participants' knowledge or understanding of CPRS improved, as reflected in the higher number of correct responses.

The significant increase in the number of correct answers from the pre-training evaluation to the post-training evaluation suggests that the training program was effective in enhancing the participants' knowledge and understanding of CPRS. It demonstrates that the training had a

positive impact on the participants' learning outcomes, as evidenced by the improved performance in the post-training evaluation.

However, it's important to note that without additional context or specific details about the evaluation methods, scoring criteria, or the content covered in the training, it is difficult to determine the full implications and significance of the increase in correct responses. Further analysis and comparison of the specific topics or areas of knowledge assessed in the pre and post-training evaluations would provide a more comprehensive understanding of the training's effectiveness.

Overall, the study suggests that the training program had a positive impact on the participants' knowledge or understanding of CPRS, as indicated by the increase in the number of correct responses in the post-training evaluation compared to the pre-training evaluation.

Based on the research findings, it can be concluded that the training provided to doctors and nurses on Computerized Patient Record system is effective in enhancing their skills and knowledge. The pre and post training evaluations have shown a significant improvement in their performance, indicating that the training programs are appropriate and effective. This study also identified some areas where the training can be improved to make it more effective and comprehensive. Initially,

- A training need assessment was conducted for doctors and nurses to be trained on a computerized patient record system, it involved evaluating their existing knowledge and proficiency with technology, understanding their specific roles and responsibilities in relation to the system, and identifying any knowledge or skill gaps that need to be addressed through training.
- Before the training , a pre-training evaluation was conducted to assess the baseline knowledge and skills of the participants . This evaluation helped in customizing the training content and approach according to the specific needs of the participants. Pre-training evaluation method included questionnaire to gauge the participants' familiarity with technology, their understanding of the system's features and functionalities, and their confidence in using it.

- Then, a customized training program was developed and implemented for the participants. The training program itself involved imparting the necessary knowledge and skills to the doctors and nurses to effectively use the computerized patient record system. The program included interactive sessions, hands-on training, demonstrations, to enhance their understanding and proficiency in using the system. Training sessions covered topics such as data entry, navigation, information retrieval, privacy and security measures, and proper documentation practices.
- Following the training program, a post-training evaluation was conducted to measure the effectiveness of the training and assess the impact on the participants' knowledge, skills, and attitudes towards the computerized patient record system. Post-training evaluations may involved questionnaire to gather feedback from the doctors and nurses on the usefulness of the training, their perceived improvement in skills, their confidence in using the system, and any further support or additional training needs they might have.
- All over after the training , majority I.e. 91% trainees claimed that the training sessions helped them in attaining the appropriate skills they needed and were satisfied with the training session and also the post training evaluation saw an increase in knowledge level of the trainees in comparison to the knowledge level in pre-training evaluation . The training need assessment helped in understanding the needs of the trainee and therefore to implement and customize a training program according to the needs of the users covering the major areas as well as an introduction of the basic things like introductory session on EMR and EHR . Further during the session , all the doubts and extra session were taken on the topics in which the users faced difficulty . Further gap areas were identified and addressed by the IT helpdesk .
- The results will help healthcare organizations optimize training programs and enhance the successful integration of computerized patient record systems in hospitals, ultimately improving patient care and overall healthcare outcome .

Chapter 5 : Discussion

The findings of this study align with previous literature on training programs for healthcare professionals on CPRS and electronic health records (EHRs). Similar to the findings of (Tigh J et al. ,2021 and Donnelle L et al. ,2021), this study demonstrates a significant improvement in performance as evidenced by the pre- and post-training evaluations. These findings support the notion that well-designed training programs can effectively enhance the skills and knowledge of doctors and nurses in utilizing CPRS.

The high satisfaction rate reported by the majority of trainees (91%) is consistent with the findings of several literature reviews on training programs for healthcare professionals. (Bates & Gawande, 2003; Curran, 2016; Edwards, 2012; Institute of Medicine, 2003; Page, 2011) also found high levels of satisfaction among trainees after participating in CPRS training sessions. This suggests that the training programs implemented in this study were successful in meeting the needs and preferences of the trainees, leading to positive outcomes and user satisfaction.

The inclusion of a training needs assessment in this study is in line with the recommendations of (Bredfeldtet al., 2013; Joseph K et al., 2013). The assessment helped in identifying the specific needs of the trainees and customizing the training program accordingly. The introduction of basic sessions on electronic medical records (EMR) and EHR, as well as addressing difficulties and gaps through additional sessions and IT helpdesk support, reflects a proactive approach to providing comprehensive training.

The successful implementation of a customized training program, considering the needs, skills, and demands of the users, is supported by the work of (Bauer, 2010). These studies emphasize the importance of tailoring training initiatives to the specific context and requirements of the users. The consideration of new features in the software, even for experienced users, aligns with the findings of (Sarato K et al. ,2023), who emphasize the need for continuous training to keep up with technological advancements.

The increase in knowledge level and improved skillset reported in the post-training evaluation is consistent with previous literature on the impact of training programs. Similar findings have been reported by ([Kaihlanen A-M et al. ,2023](#) and [Awad EB et al. ,2013](#)), indicating that training initiatives can effectively enhance knowledge and skills among healthcare professionals.

While the findings of this study align with existing literature, it is important to acknowledge some limitations. The sample size and specific context of the study may limit the generalizability of the findings. Future research could involve larger and more diverse samples to further validate the effectiveness of the training program.

Also findings of this study highlight the positive impact of the training program on the skills, knowledge, and confidence of doctors and nurses in utilizing the CPRS. The significant improvement observed in the trainees' performance, as indicated by the pre- and post-training evaluations, suggests that the training programs implemented were appropriate and effective. These findings are consistent with previous literature on training programs for healthcare professionals on electronic health records (EHRs) and computerized patient record systems.

Several studies have emphasized the importance of customized training programs tailored to the specific needs and preferences of healthcare professionals for successful implementation and adoption of CPRS. The training need assessment conducted in this study played a vital role in understanding the needs of the trainees and implementing a customized training program that covered major areas of concern. This aligns with the findings of ([Garnett J et al. ,2021](#)), who found that individualized training programs significantly enhance user satisfaction and skills acquisition.

The high satisfaction rate (91%) reported by trainees in this study indicates that the training sessions were well-received and perceived as beneficial in attaining the required skills. This finding supports the work of ([Heponiemi T and colleagues ,2023](#)), who found that satisfied trainees are more likely to effectively use the CPRS and experience positive impacts on patient care and workflow efficiency.

Moreover, the identification and addressing of gap areas through an IT helpdesk exemplify a proactive approach to ongoing support and continuous improvement. Similar strategies have been reported in the literature, such as the work of ([Sarato K et al. ,2023](#)), who emphasized the importance of providing post-training support and resources to address challenges faced by users and ensure sustained utilization of CPRS.

Interestingly, the study participants, although having previous experience with CPRS, were trained on the new features and functionalities of the software. This approach reflects the recognition of the evolving nature of healthcare technologies and the need for continuous training and skill development, even for experienced users. This finding aligns with the findings of ([Figliette CD et al. ,2023](#)), who emphasized the importance of training programs that keep pace with technological advancements and changes in system capabilities.

The post-training evaluation showing an increase in the knowledge level and the majority of users feeling confident in using CPRS and experiencing an improvement in their skillset further validates the effectiveness of the training program. These findings are consistent with the literature on the impact of training programs on user competence and confidence in utilizing CPRS ([Bredfeldtet al., 2013](#); [Joseph K et al., 2013](#)).

In conclusion, this study contributes to the existing literature by demonstrating the effectiveness of a tailored training program for doctors and nurses on CPRS implementation. The findings highlight the importance of customization, ongoing support, and continuous improvement in training initiatives. They support the notion that well-designed and targeted training programs can significantly enhance the skills, knowledge, and confidence of healthcare professionals in utilizing CPRS, ultimately benefiting patient care and overall healthcare delivery.

Chapter 6 : Conclusion

1. Specific Training Needs And Preferences Of Doctors And Nurses For The CPRS

- This research article aimed to investigate the training needs and preferences of doctors and nurses for the implementation of a Computerized Patient Record System (CPRS).
- This research helped to gather insights into the training requirements and preferences of doctors and nurses, providing valuable information for the successful implementation of the CPRS.

2. Increase in Knowledge And Skills of The Participants

- The study also established a baseline understanding of participants' knowledge and skills, which served as a benchmark for evaluating the impact of the training program.
- By comparing the pre-training and post-training evaluations, the effectiveness of the training program was assessed.

3. Helped to Compare The Baseline Data (Pre Training Evaluation) To The Post-Training Evaluation To Assess The Effectiveness Of The Training Program

- The study also established a baseline understanding of participants' knowledge and skills, which served as a benchmark for evaluating the impact of the training program.
- By comparing the pre-training and post-training evaluations, the effectiveness of the training program was assessed

4. Helped to find Gap Areas In Order To Identify Any Areas Where Further Training May Be Needed

- By comparing the pre-training and post-training evaluations, the effectiveness of the training program was assessed.
- Moreover, the research identified gap areas where participants may require additional training to address specific challenges or enhance their proficiency in utilizing the CPRS

- These findings guided the development of targeted training interventions to bridge the identified gaps and ensure that healthcare professionals are equipped with the necessary knowledge and skills to effectively utilize the CPRS.
- Overall, this research article contributes to the body of knowledge regarding the training needs and preferences of doctors and nurses for CPRS implementation. It provides a foundation for designing tailored training programs, improving overall healthcare delivery, and promoting the successful adoption and utilization of computerized patient record systems in healthcare settings.

Suggestions

Based on the research findings and conclusion, the following suggestions are suggested:

1. Continuously evaluate and improve the training program: While the study found the training to be effective, it is important to conduct regular evaluations to identify areas for improvement. Gather feedback from trainees to understand their specific needs and preferences and make necessary adjustments to the training program accordingly.
2. Address identified areas for improvement: The research identified some areas where the training can be enhanced to make it more effective and comprehensive. Use this information to update and refine the training program, ensuring that it covers all necessary topics and addresses any gaps or challenges that trainees may have encountered.
3. Provide ongoing support and resources: Even after the initial training, it is crucial to provide ongoing support to doctors and nurses. Establish a dedicated helpdesk or support system where trainees can seek assistance, clarify doubts, and receive additional guidance as needed. Offer resources such as user manuals, FAQs, and online forums to facilitate continuous learning and skill development.
4. Consider individual learning needs: Recognize that trainees may have varying levels of experience and familiarity with CPRS. Customize the training program to cater to individual learning needs, providing targeted instruction and additional guidance for those who require it. This ensures that all trainees can benefit from the training and gain the necessary skills to effectively utilize CPRS.
5. Foster a positive learning environment: Create a positive and supportive learning environment during the training sessions. Encourage trainees to ask questions, share experiences, and engage in discussions. Promote collaboration and interdisciplinary learning, where doctors and nurses can learn from each other's perspectives and experiences.
6. Monitor and measure the long-term impact: Track the long-term impact of the training program on trainees' skills, knowledge, and job performance. Conduct follow-up

assessments and evaluations to assess the sustainability of the training outcomes and identify any areas that may require further reinforcement or advanced training.

By implementing these suggestions, the research article can provide practical recommendations for optimizing the training program for doctors and nurses on CPRS implementation, ensuring that it continues to effectively enhance their skills, knowledge, and confidence in utilizing the system.

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Annexure

Questionnaire on "Training Need Assessment for CPRS"

This form contain questions for identifying the specific training needs and preferences of doctors and nurses for smooth implementation of CPRS in BLK-MAX Super Speciality Hospital , New Delhi.

CONSENT :

You are being asked to participate in research survey conducted by Nikita Singh under the supervision of Mr. Azad Kumar Unit Head of IT Department of BLK -MAX Super Speciality Hospital.

Information given by the respondent will be completely anonymous and confidential and will not be used for any other researches .

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* Indicates required question

1. What is your current job role? *

- ☐ Doctor
- ☐ Nurse

2. On a scale of 5 how will you rate yourself in terms of proficiency with computer applications? *

1 2 3 4 5

Beginner ☐ ☐ ☐ ☐ ☐ Highly Proficient

4.45 TRAINING NEED ASSESSMENT QUESTIONNAIRE

3. Rate your typing ability - *

- ☐ Poor
- ☐ Moderate
- ☐ Good

4. Do you know about the concept of EHR and EMR? *

- ☐ Yes
- ☐ No

5. Have you heard about CPRS before? *

- ☐ Yes
- ☐ No

6. If yes, are you aware of the benefits of using CPRS? *

- ☐ Yes
- ☐ No
- ☐ Maybe

4.45 TRAINING NEED ASSESSMENT QUESTIONNAIRE

7. Do you think implementing CPRS will greatly influence patient satisfaction and will help in delivering quality of care? *

☐ Yes

☐ No

8. How much estimated time will you need to get a hands on of CPRS and can start using it? *

☐ 1 Month

☐ 2 Months

☐ Can't Say

9. Which mode of training will be suitable for you? *

☐ Offline Presentation Mode

☐ Hands On

☐ Video Based Training

4.45 TRAINING NEED ASSESSMENT QUESTIONNAIRE

10. Have you gone through the user information manual of CPRS provided to you? *

☐ Yes

☐ No

11. Are you aware of your role-specific function accessibility in CPRS? *

☐ Yes

☐ No

12. Are you aware of your VISTA IDs and its use while accessing patient records ? *

☐ Yes

☐ No

13. Are you aware of electronic signatures in context of CPRS? *

☐ Yes

☐ No

4.45 TRAINING NEED ASSESSMENT QUESTIONNAIRE

14. Are you aware of the various functions one can perform using CPRS? *

☐ Yes

☐ No

15. Which all patient record sheets does the CPRS contain (Multiple answers possible) *

☐ Doctors Note

☐ Drug Chart

☐ Consent

☐ IP Assessment

☐ Medication Orders

☐ Discharge Summary

16. Do you think you can raise order for medication through CPRS ? *

☐ Yes

☐ No

4.45 TRAINING NEED ASSESSMENT QUESTIONNAIRE

17. Have you heard about Clinical Decision Support System (CDSS) ? *

☐ Yes

☐ No

18. Do you need training on Clinical Decision Support System (CDSS) ? *

☐ Yes

☐ No

19. According to you , Which all patient data should be compulsorily entered in in CPRS ? (Multiple Answers Possible) *

☐ Initial Assessment

☐ Diagnosis

☐ Allergy Assessment

☐ Vitals

20. What do you think , Are Clinical Reminders important ? *

☐ Yes

☐ No

4.45 TRAINING NEED ASSESSMENT QUESTIONNAIRE

21. Orders that can be taken on CPRS are ? *

- ☐ Pharmacy Orders
- ☐ Laboratory Orders
- ☐ Radiological Orders
- ☐ None of the Above

22. What do you think , Can Reports be viewed on CPRS ? *

- ☐ Yes
- ☐ No
- ☐ Maybe

23. How much time can you spend every day for training purposes? *

- ☐ 1 Hour
- ☐ 30 Minutes
- ☐ Depends

Submit

[Clear form](#)

4.45 TRAINING NEED ASSESSMENT QUESTIONNAIRE

PRE-TRAINING SURVEY QUESTIONNAIRE

This form contains questions related to CPRS for evaluation the pre training knowledge level of Doctors and Nurses .

CONSENT:

You are being asked to participate in research survey conducted by Nikita Singh who is being supervised by Mr. Azad Kumar Unit Head of IT Department of BLK-MAX Super Speciality Hospital .

Information given by the respondent will be kept confidential and will not be used for any other researches.

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* Indicates required question

1.How would you rate your current understanding of CPRS ? *

1	2	3	4	5
☐	☐	☐	☐	☐

4.46 PRE-TRAINING ASSESSMENT QUESTIONNAIRE

2. How much experience do you have with an electronic health record? *

- ☐ Currently using an electronic health record
- ☐ Used at least one electronic health record at a previous job
- ☐ Used multiple electronic health records at previous jobs
- ☐ Never used

3. How would you rate your confidence with a computer? *

- ☐ beginner
- ☐ average (email, search the internet)
- ☐ proficient (email, internet, use multiple computer programs)

4. Full form of CPRS is - *

- ☐ Computerized Patient Record System
- ☐ Computer and Patient Recording System
- ☐ Conventional Patient Record System
- ☐ None of the Above

4.46 PRE-TRAINING ASSESSMENT QUESTIONNAIRE

5. CPRS implementation will help in - *

- ☐ Organizing Patient data
- ☐ Easy retrieval of records
- ☐ Increasing productivity and quality of care
- ☐ All of the Above

6. Patients can be searched through - *

- ☐ Patient UHID
- ☐ Ward
- ☐ Attending Physician
- ☐ All of the above

7. Initial Assessment should be filled before - *

- ☐ 24 hours
- ☐ 12 hours
- ☐ 48 hours
- ☐ 72 hours

4.46 PRE-TRAINING ASSESSMENT QUESTIONNAIRE

8. You can take the consent of a patient on CPRS as well, manual records are not necessary, True or False? *

- ☐ True
- ☐ False

9. Discontinue Order functionality is used to discontinue the active, pending, and unreleased order. True or False *

- ☐ True
- ☐ False

10. Electronic signatures are of great importance if you wish to place and order, sign a note, create a discharge summary. True or False? *

- ☐ True
- ☐ False

Submit

Clear form

4.46 PRE-TRAINING ASSESSMENT QUESTIONNAIRE

POST-TRAINING SURVEY QUESTIONNAIRE

This form contains questions related to CPRS for evaluating the post training knowledge level of Doctors and Nurses .

CONSENT:

You are being asked to participate in research survey conducted by Nikita Singh who is being supervised by Mr. Azad Kumar Unit Head of IT Department of BLK-MAX Super Speciality Hospital .

Information given by the respondent will be kept confidential and will not be used for any other researches .

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* Indicates required question

1. Did the training meet your expectations ? *

☐ Yes

☐ No

2. Given the material covered, the length of the training was: *

☐ too long

☐ too short

☐ just right

4.46 POST-TRAINING ASSESSMENT QUESTIONNAIRE

3. How would you rate the overall quality of the training ? *

- 1 2 3 4 5
- ☐ ☐ ☐ ☐ ☐

4. You can search for a patient through advance search option by entering any of * these fields -

- ☐ Patient Name
- ☐ Bed Number
- ☐ Ward

5. Which functionality can be used to view the patient short clinical details like * complains, vitals, allergy etc. ?

- ☐ Patient Clinical Details Snapshot
- ☐ Cover Sheet
- ☐ Patient Demographic Details
- ☐ None of the Above

4.46 POST-TRAINING ASSESSMENT QUESTIONNAIRE

6. Patients can be searched through - *

- ☐ Wards
- ☐ Speciality
- ☐ Appointment
- ☐ All of the Above

7. "New Notes" functionality is used to create new notes. True or False? *

- ☐ True
- ☐ False

8. Maximum how many parameters can be viewed on a single multiple vital graphs ? *

- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 1

4.46 POST-TRAINING ASSESSMENT QUESTIONNAIRE

9. It is mandatory to fill the Initial Assessment and VTE Risk Assessment within ? *

☐ 24 hours and 36 hours respectively

☐ 36 hours and 24 hours respectively

☐ 12 hours and 24 hours respectively

☐ There is no such mandate

10. Did the training help you in gaining appropriate skills and knowledge ? *

☐ Yes

☐ No

Submit

Clear form

4.46 POST-TRAINING ASSESSMENT QUESTIONNAIRE