**SUMMER PLACEMENT**

**IN**

**MEDIMETRY, FARIDABAD**

**(28 Feb 2019 – 28 May 2019)**

# EVALUATION OF ELECTRONIC MEDICAL RECORDS ADOPTION BY DOCTORS IN FARIDABAD (HARYANA)

**Submitted**

**By**

**Dr.Shriti Singh**

**PG/17/62**

**Under the guidance of**

**Dr.Anandhi Ramachandran**

**POST GRADUATE DIPLOMA IN HOSPITAL AND HEALTH MANANGEMENT**

**2017-19**

IIHMR DELHI

# (Completion of Dissertation from respective organization)

The certificate is awarded to

**Dr.Shriti Singh**

In recognition of having successfully completed his/her
Internship in the department of

**Designing and Development of Electronic Medical Records**

and has successfully completed his/her Project on

**"Evaluation of Electronic Medical Records Adoption By Doctors in Faridabad"**

**Date: 28-05-2019**

**Medimetry, Faridabad**

He/She comes across as a committed, sincere & diligent person who
has a strong drive & zeal for learning.

We wish him/her all the best for future endeavors.

**Training & Development**

**Zonal Head-Human Resources**

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Shriti Singh**, a student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at **Medimetry, Faridabad** from **28th February 2019 to 28th May 2019**

The Candidate has successfully carried out the study designated to him during internship training and his/her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his/her future endeavors.

PK Panda

**Dr Pradeep K Panda**

**Dean, Academics and Student Affairs**

**IIHMR, New Delhi**

Dr Anandhi Ramachandran

Associate Professor

IIHMR, New Delhi

## Certificate of Approval

The following dissertation titled **"Evaluation of Electronic Medical Records Adoption By Doctors in Faridabad (Haryana)"at Medimetry, Faridabad** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

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| Dr. P.L Joshi | |
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| Dr. Pradeep Panda | PK Panda |

**INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH**

**NEW DELHI**

## CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **"Evaluation of Electronic Medical Records Adoption By Doctors in Faridabad(Haryana)"** and submitted by **Shriti Singh PG/17/062** under the supervision of **Dr. Anandhi Ramachandran and Mr. Krishan Tyagi** for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from **28th Febraury 2019 to 28th May 2019** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature

# FEEDBACK FORM

**Name of the Student:** Dr. Shrishi Singh

**Dissertation Organisation:** Medimetry, Faridabad

**Area of Dissertation:** Designing & Development of Electronic Medical Records

**Attendance:** Full

**Objectives achieved:** Learnt the Details of EMR

**Deliverables:** Analysis of Critical Success Factors to drive EMR adoption in Faridabad.

**Strengths:** Keen Learner
Hard Working

**Suggestions for Improvement:** Wishing her all the best for future

**Suggestions for Institute (course curriculum, industry interaction, placement, alumni):**

Krishna

**Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)**

**Date:** 5-6-2019
**Place:** Faridabad.

# INDEX

**TABLE OF CONTENTS**

# ABSTRACT

Electronic Medical Records (EMRs) are computerized medical information systems that gather, store and show patient information .They are a means to create clear and organized recordings and to access clinical data about individual patients. Further, EMRs are intended to exchange existing paper based medical records which are already acquainted by practitioners. Patient records have been kept in paper form for centuries and over this period of time, they have consumed increasing space and delayed access to effective medical care. In contrast, EMR collects individual patient clinical data electronically and allow instant availability of this data to all providers in healthcare chain and so should support in providing logical and consistent care.

Electronic Medical Records (EMRs) and Electronic Health Records (EHRs) are viewed as identical synonyms in most health informatics. The observed advantages of EMRs can be briefed as improving the documentation of patient meetings, improving communication of information to physicians, improving access to patient medical data, decline of errors, adjusting billing and improving compensation for services, forming a data warehouse for research and quality improvement, and reduction of paper. As EMRs are viewed as having a great potential for improving quality, stability, safety and efficacy in healthcare, they are being implemented across the world.

The purpose of the study is to understand the reasons of EMR non-adoption among doctors of Faridabad. The two main objectives of the study are to analyze the level of awareness of doctors towards electronic medical records, their use and benefits. Secondly,to understand the perception of doctors towards the barriers and challenges in adopting electronic medical records in their work. The study was conducted among the private doctors in Faridabad. A mixed research design is proposed for the study. Private Doctors from different specialties- General Practitioner, ENT, Gynecology, Ayurveda, Orthopedics, Ophthalmology, and Pediatrics will be invited to participate in the study. The final sample comprised of 70 participants from different clinical specialities were approached and invited to participate in answering questionnaires. Convenient Sampling and snowball effect was used as a sampling technique. Analysis of data is done using Microsoft Excel.

The Primary Data was collected through semi structured questionnaire with quantitative data (with Likert's scale rating) and qualitative data (open ended questions) and Secondary data was collected through literature Survey using Google, Google Scholar, EBISCO, Pubmed. The study is expected to identify the factors that impede the acceptance of EMR by the private physicians. It will also throw light on how these barriers affect the physician's resistance to use EMR. Based on the study, some useful interventions will be proposed that can be used as references by EMR implementers. Majority of doctors participated in study were having working experience 1-10 years, mostly doctors have 20- 30 years of experience and there were very few doctors having no experience. Majority of doctors those were interested in benefits of EMR thought that information is easily accessible, mostly thought that clinical notes are more legible and very few thought that it improve quality of care by reducing medical errors. Various reasons for increase EMR adoption were educate physician about EMR, provide training sessions and show profitable examples for EMR adoption. Various barriers for EMR adoption were majority of doctors thought that initial cost is high for purchasing EMR , more time for learning software and very few said that EMR takes more time to maintain patient record while other barriers include complexity of EMR not user friendly and longer time for implementation. Hence, it's adoption can be increased by Providing proper documentation on return on investment to the doctors, educate physicians and support ongoing training, customization, promote and communicate reliability & availability of the system.

# ACKNOWLEDGEMENT

Hard work, guidance and perseverance are the pre requisite for achieving success. Support from an enlightening source helps us to proceed on the path to it. I wish to thank first of all the almighty that provided me energy for the successful completion of summer training at Medimetry,Faridabad.

I am thankful and obliged to my mentor at Medimetry,Faridabad Mr.Krishan Tyagi for giving me an opportunity to work on this project. I am also thankful to my mentor Dr.Anandhi Ramachandran for his valuable guidance and motivation on various aspects of project.

It has been my good fortune to be benefited by their knowledge, guidance and deep insight without which this project would not have taken the exact shape. To them, I tender my heartfelt regards.

Finally I thank all the Doctors who gave their valuable time and participated in our study.

Thank you,
Dr.Shriti Singh
PGDHHM,
IIHMR, New Delhi

## LIST OF FIGURES



## LIST OF TABLES

## LIST OF ABBREVATIONS

| | |
|---|---|
| COPD | Chronic Obstructive Pulmonary Disease |
| PMS | Patient Management System |
| EMR | Electronic Medical Record |
| DMP | Disease Management Platform |
| UHC | Universal Health Coverage |
| ICD | International Classification of Disease |
| LOINC | Logical Observation Identifiers Names and Codes |

**INTERNSHIP REPORT**

# Medimetry

MediMetry runs Primary Health Centers in semi-urban and rural areas of Haryana. While we routinely address the primary healthcare concerns of our patients, we also specialize and focus on managing chronic diseases - specifically Hypertension and Diabetes. In the near future, we plan to expand our chronic disease focus to include Asthma (COPD) and Mental Health. We have adopted a unique "High Touch + High Tech" approach to creating high-quality patient outcomes with positive unit economics.

In addition to using qualified and motivated medical staff at our centers, we have also developed and deployed a comprehensive Patient Management System (PMS) that includes an Electronic Medical Reports (EMR) system.

MediMetry understands the critical role that doctors and other healthcare workers play in the Indian healthcare system and the vital role technology plays in ensuring scalable, high-quality clinical outcomes.

**Disease Management Platform (DMP)**

MediMetry's DMP acts as a decision support system for MBBS doctors. While MBBS doctors are trained and competent enough to diagnose potentially chronic conditions, they often don't have the advanced training/specialization required or the experience needed to properly manage those chronic diseases. Based on the doctors preliminary diagnosis and related inputs MediMetry's DMP suggests next suitable course of action. The DMP has 3 main components:

1. **Clinical Protocols** - Treatment protocols are designed based on the expert opinions of senior medical college scholar practitioners with years of experience at the highest levels of their respective professions. The DMP (Disease Management Platform) will make treatment and diagnostic suggestions to MBBS doctor via an order set. These are merely informed and learned suggestions and the doctor has complete autonomy to act (or not to act) on the advice being given

2. **Order Sets** - These are drug sets, investigation sets, procedure sets and referral sets. Based on the doctor inputs, the clinical protocol suggests what medications, lab tests, procedures are required and if required what other specialists the patient should be referred to (e.g., Dietitian, Endocrinologist, Cardiologist)

3. **Reminders** - This protocol also reminds the patient and doctor at which frequency which tests have to be done to better manage the disease on an ongoing basis.
As soon as the doctor enters his/her diagnostic inputs, the DMP (Disease Management Platform) based on the patient's medical records stored in MediMetry's Electronic Medical Records (EMR) system will shows the order sets as shown below:

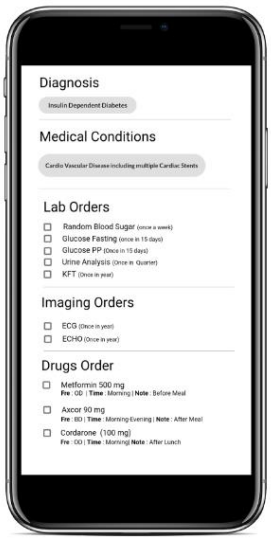



***Figure 3.1**:- Order Sets*

Since EMR (Electronic Medical Records) has all the patient records, it knows which tests the patient has already undergone and which are required so that the doctor can prescribe only the required tests and medication. This standardization not only ensures better clinical outcomes for the patient but also better cost control at the policymaker level. To make state level Universal Healthcare Coverage (UHC) programmes successful there has to be a shift from volume based care to value based care and value can be determined only by a standardized system like a DMP (Disease Management Platform). A DMP system also helps elevate the overall quality of care as well as improving the overall efficacy of clinical outcomes across the state by providing MBBS and MD doctors with the latest clinical protocols to treat chronic diseases.

**Electronic Medical Records System (EMR)**

At the heart of MediMetry's PMS is an EMR (Electronic Medical Records) system that captures all interactions between the patient and their doctor. Whenever a patient interacts with their healthcare providers the system records the results of those interactions by storing all records/prescriptions/test results electronically in the EMR (Electronic Medical Records) system. MediMetry's EMR (Electronic Medical Records) system is based on the MDDS standards published by the Government of India to ensure seamless interoperability.

MediMetry's EMR (Electronic Medical Records) is based on:

1. ICD-10 : Standards for Diagnosis
2. LOINC: Standards for lab tests
3. Drug database for generic drug substitution.

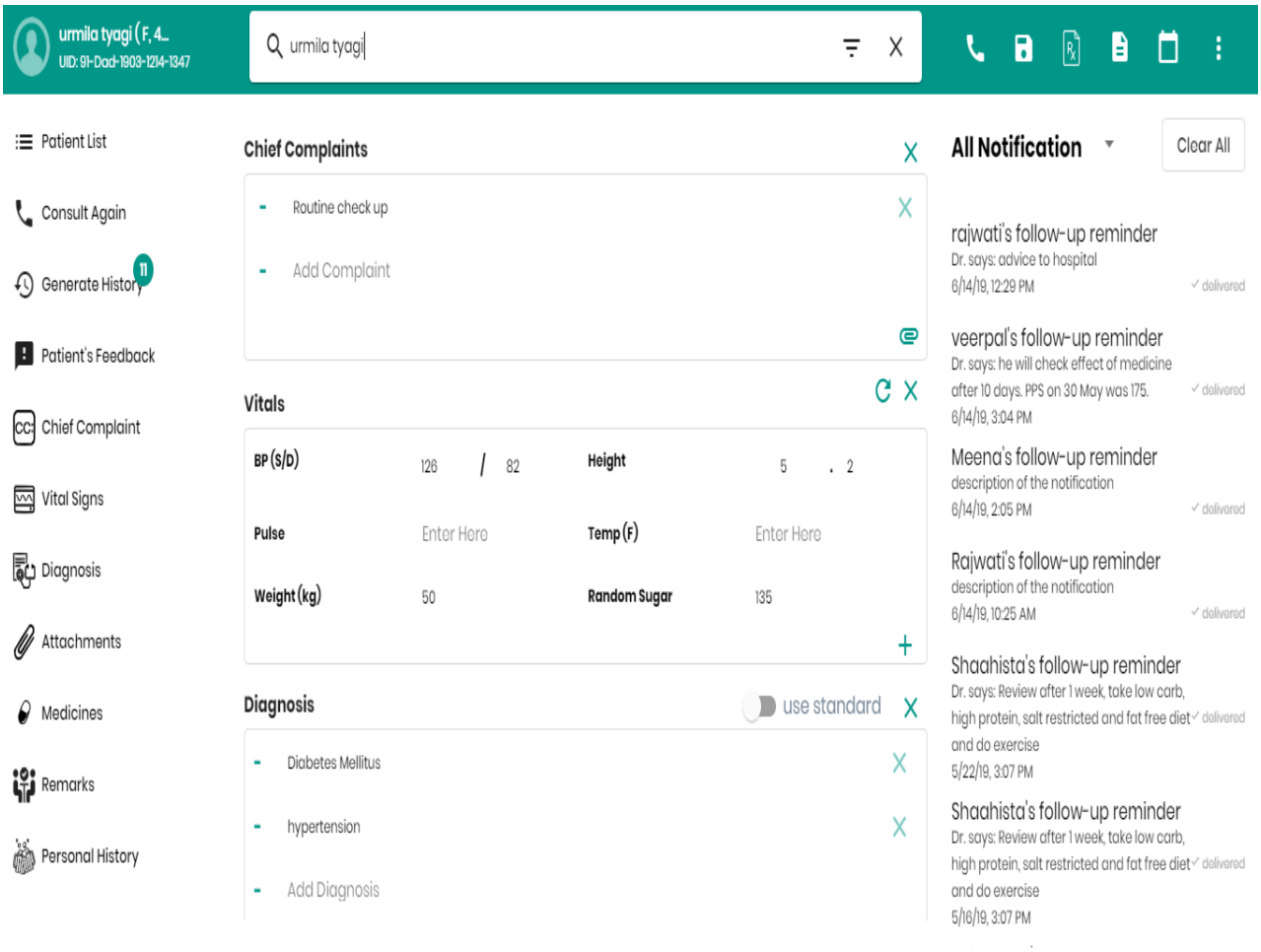



***Figure 3.2**:- Dashboard of Electronic Medical Records*

## Learning from internship Period

The major learning gathered from this period are as follows-

1.Designing Specifications according to the user interface.

2.Hands – on experience on EMR software.

3.Interaction with various clients involved.

4.Market Research.

5.Insight over the different queries raised by clients over EMR software.

# DISSERTATION REPORT

Evaluation of EMR Adoption by Doctors in Faridabad (Haryana)

## 1. INRODUCTION

Electronic Medical Records (EMRs) are computerized medical information systems that gather, store and show patient information .They are a means to create clear and organized recordings and to access clinical data about individual patients. Further, EMRs are intended to exchange existing paper based medical records which are already acquainted by practitioners. Patient records have been kept in paper form for centuries and over this period of time, they have consumed increasing space and delayed access to effective medical care. In contrast, EMR collects individual patient clinical data electronically and allow instant availability of this data to all providers in healthcare chain and so should support in providing logical and consistent care.

Electronic Medical Records (EMRs) and Electronic Health Records (EHRs) are viewed as identical synonyms in most health informatics. The observed advantages of EMRs can be briefed as improving the documentation of patient meetings, improving communication of information to physicians, improving access to patient medical data, decline of errors, adjusting billing and improving compensation for services, forming a data warehouse for research and quality improvement, and reduction of paper. As EMRs are viewed as having a great potential for improving quality, stability, safety and efficacy in healthcare, they are being implemented across the world.

Electronic medical record (EMR) systems have been suggested as technology to improve the quality of patient care, decline medical errors, control and reduce medical expenditure, still the financial effects have not yet been as well documented in China.

In spite of the high potentials and interest in EMRs worldwide, their overall adoption rate is relatively low and they face numerous problems. For instance, they are seen as conflicting to a

physician's outdated working style, they need a greater ability in dealing with computers and installing a system absorbs large financial resources. According to Meinert, the slow rate of adoption proposes that resistance among physicians must be strong because physicians are the main frontline user-group of EMRs. Whether or not they support and use EMRs will have a great effect on other user-groups in a medical practice, such as nurses and administrative staff. As a result, physicians have a great effect on the overall adoption level of EMRs.

As it requires physicians to actively support and use EMRs to benefit from them, it is essential to understand the possible barriers to their implementation from the physicians' perspectives
Very few studies have been carried out in India with respect to EMR adoption. This study aims to know the physicians view point about EMR and its benefits and the perceived barriers.

## 2. LITERATURE REVIEW

**Boonstra, A., & Broekhuis, M. (2010, August 06). Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions. Pubmed,doi: 10.1186/1472-6963-10-231:** They both did a literature review of various studies to identify, categorize and analyze barriers perceived by physicians to the adoption of Electronic Medical Records(EMRs).Four databases"Science,"EBSCO","Pubmed" and "The Conchrane Library",were used in the literature search. At the end of the research they concluded that despite the positive effects of EMR usage in medical practices,the adoption rate of EMR is low and meets resistance from physicians and that the process of EMR implementation should be treated as a change project as change management plays an important role in the success of EMR implementation .

**Healthcare records going E-way-Bindu Gopal Rao: An abstract from Life Science India edition Aug-Sep 2012-**It captures view points of many prominent names in Healthcare industry regarding the current and future status of EMR in India.It also focuses on the challenges which EMR are facing in India.It concludes that though there are cost barriers legal barriers but EMR is fast becoming norm in Indian hospitals.

**Reaping the benefits of electronic medical records-Davis,Michael W,Healthcare Financial Management 47.6(Jun1993):60-2,64,66:**This article focuses on the benefits of electronic medical records and how they can be of great use in delivering quality health services at the end it concluded that ,An electronic medical record system should provide benefits beyond scanning, archiving ,retrieving, and printing patient care data to add value to the medical records.

**Electronic Medical Records: A Review Comparing the Challenges in Developed and Developing Countries-Sanjay P.Sood, Stacie N.Nwabueze, Nupur Prakash, Saroj Mishra, Proceedings of the 41st Hawaii International Conference on System Sciences - 2008** This paper examines the challenges faced by developing countries

toward the development, progression and sustainability of Electronic Medical Records .The paper also provides a review of implementation of varying types of electronic medical data management systems in developing countries. This study concludes that for developing countries many challenges exist that are unique to the population and environment. Medical record system so far have been shown to do the job but significant problems are encountered in the management of many systems. Web-based systems for information management will be the first step in making systems workable. Such systems will eliminate the problems caused by frequent power outages that may affect data storage causing loss and damage to data storage and back up. This will set the stage for more comprehensive development of EMR.

**Study of the cost-benefit analysis of electronic medical record systems in general hospital in China Li, K., Naganawa, S., Wang, K., Li, P., Kato, K., Li, X., . . . Yamauchi, K. (2012, October):3283-91.**This study was conducted in general hospital of China, where a cost benefit analysis of EMR implementation was calculated. The result of the study showed that the net financial benefit after EMR implementation was ranging from a $76,970 net cost to a $1,062,122 net benefit whereas the time of return on investment is 5.38 years which concluded that an EMR system cost –benefit analysis can rapidly demonstrate a positive return on investment when implemented in hospitals.

**Mehta, N., & Pandit, A. (2017). Perceptions of EMR System by Doctors in Pune (India). Indian Journal of Public Health Research & Development, 8(4), 540. doi:10.5958/0976-5506.2017.00396.5.**Electronic Medical Record can reduce healthcare costs as well as improve the efficiency &effectiveness of healthcare facilities, However, only a very few physicians in small practices in India uses EMR. This study focuses on examining factors that impede or facilitate the adoption of EMR system by small physician practice .The study contributes to overall understanding of the perception of physicians about EMR systems, and helps find the methods that can be used to improve the adoption of EMR systems.

# 3. OBJECTIVES

The purpose of the study is to understand the reasons of EMR non-adoption among doctors of Faridabad. The two main objectives of the study are:

1. To analyze the level of awareness of doctors towards electronic medical records, their use and benefits.
2. To understand the perception of doctors towards the barriers and challenges in adopting electronic medical records in their work.

# 4. RESEARCH METHODOLOGY

**Research Design:** A mixed research design is proposed for the study.

**Sample Population:** Private Doctors from different specialties- General Practitioner, ENT, Gynecology, Ayurveda, Orthopedics, Ophthalmology, and Pediatrics will be invited to participate in the study.

**Scope of the study:** The study will be conducted among the private doctors in Faridabad.

**Inclusion Criteria:** For Early or Mid-Career Specialist is a male or female between the age of 25 and 60 years and minimum experience criteria is between 1 to 20 years
For Experienced Specialist above 50 & 55 years of age and minimum experience criteria is between 20 to 30 years.

**Exclusion Criteria**: Government Doctors as they refused to participate were excluded from the study.

**Sample Size:** The final sample is 70 participants from different clinical specialties who have agreed to participate in the survey.

**Sampling Technique** : Convenient Sampling and snowball effect.

**Data Collection Method & Tools:**
Primary Data: Semi structured questionnaire with quantitative data (with Likert's scale rating) and qualitative data (open ended questions)

Secondary Data: Literature Survey using Google, Google Scholar, EBISCO, Pubmed

**Data Collection Techniques:** Google Survey(Survey (online), direct survey and telephonic interviews via Questionnaire

**Data Analysis:** Microsoft Excel will be used for storing and analysing the data

**Time Frame**: - The total time frame of the study is 3 months (28.2.2019 to 28.5.2019) which will include pilot testing, data collection and analysis.

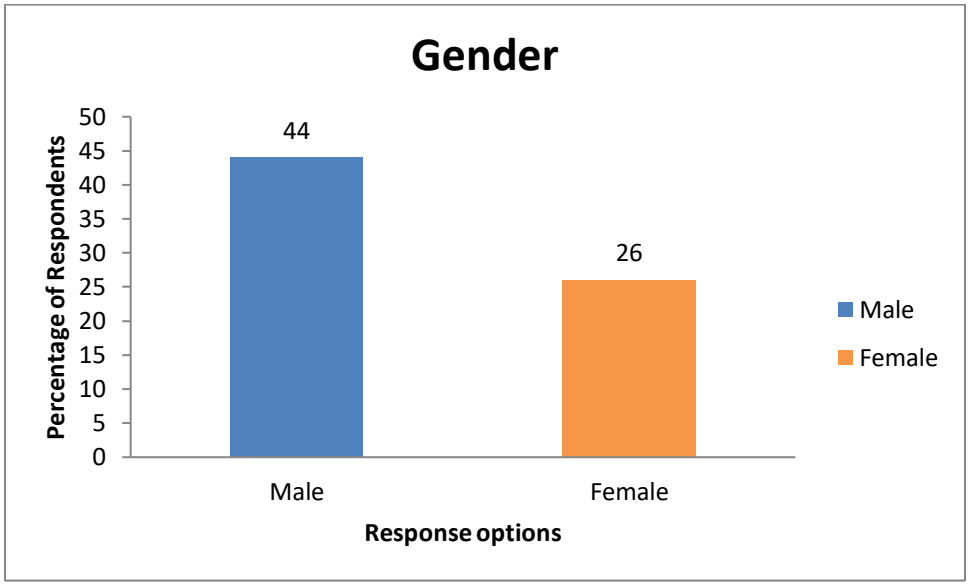
**Expected Outcomes**:

The study is expected to identify the factors that impede the acceptance of EMR by the private physicians. It will also throw light on how these barriers affect the physician's resistance to use EMR. Based on the study, some useful interventions will be proposed that can be used as references by EMR implementers.

## 5. RESULTS

**Table 5.1: Representing the gender wise participation**

| | |
|---|---|
| Male | 44 |
| Female | 26 |

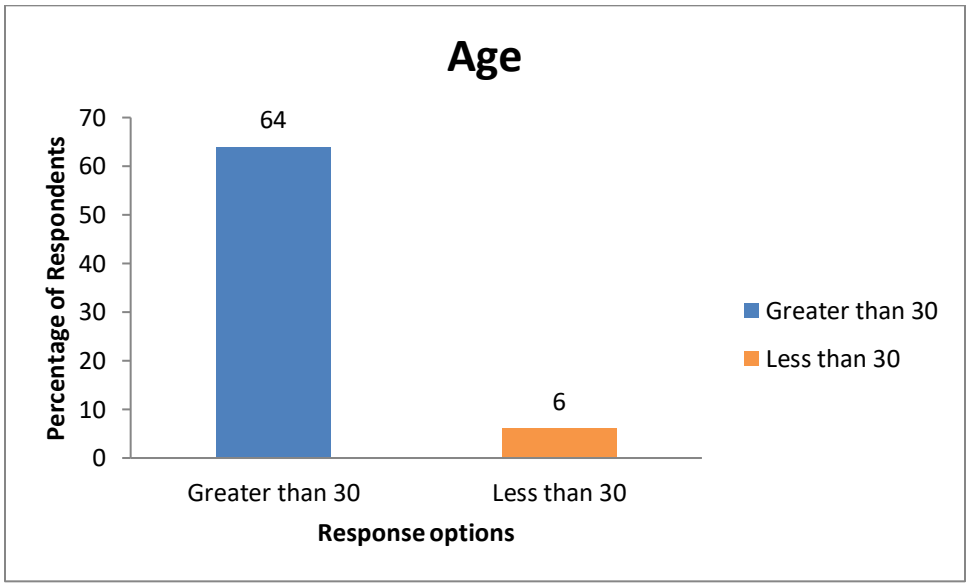



**Inference 5.1**

The table shows that there were 44 males and 26 females out of 70 on whom survey was conducted.

**Table 5.2 : Representing Age of Respondents**

| | |
|---|---|
| Greater than 30 | 64 |
| Less than 30 | 6 |

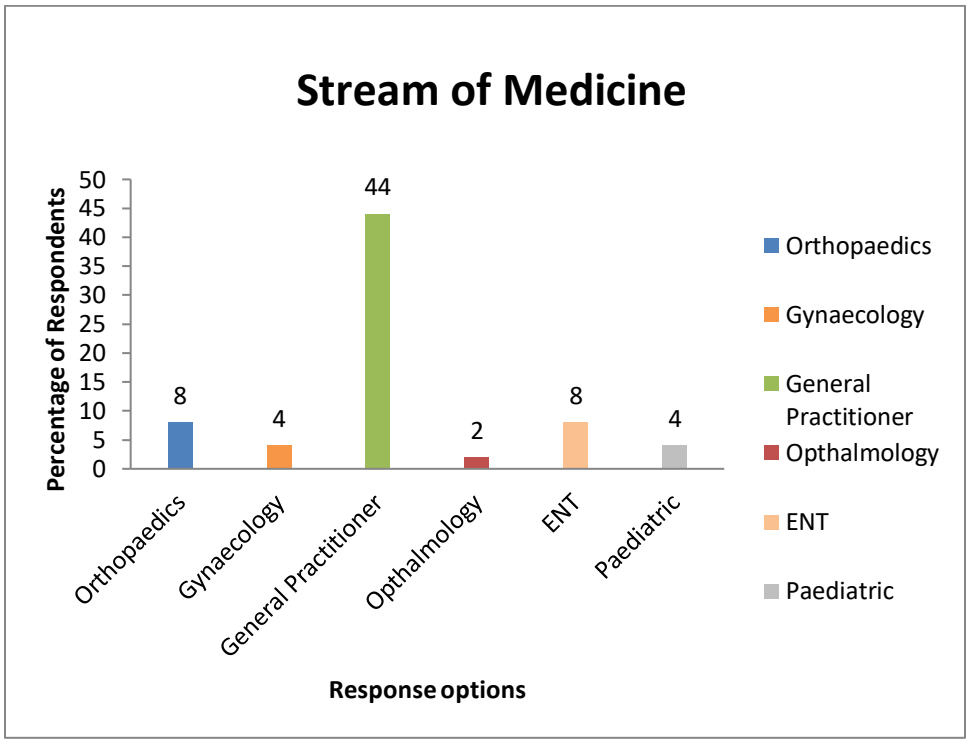



**Inference 5.2:**

64 doctors out of 70 were above the age of 30 and 6 doctors were less than 30

**Table 5.3: Representing stream of medicine**

| | |
|---|---|
| Orthopaedics | 8 |
| Gynaecology | 4 |
| General Practitioner | 44 |
| Opthalmology | 2 |
| ENT | 8 |
| Paediatric | 4 |

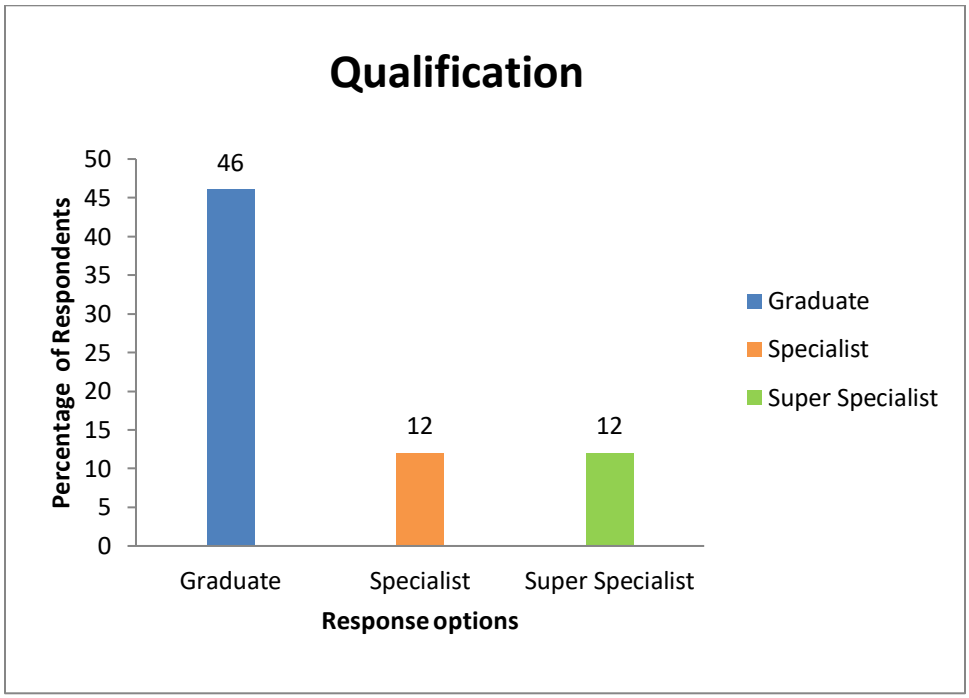



**Inference 5.3:**

Out of total doctors surveyed majority i.e 44 were General Practitioner, 8 were from ENT,8 were from Orthopaedics, 4 were from Gynecology, 4 were from paediatric and 2 were from ophthalmology.

**Table 5.4: Representing the Qualification of doctors**

| | |
|---|---|
| Graduate | 46 |
| Specialist | 12 |
| Super specialist | 12 |

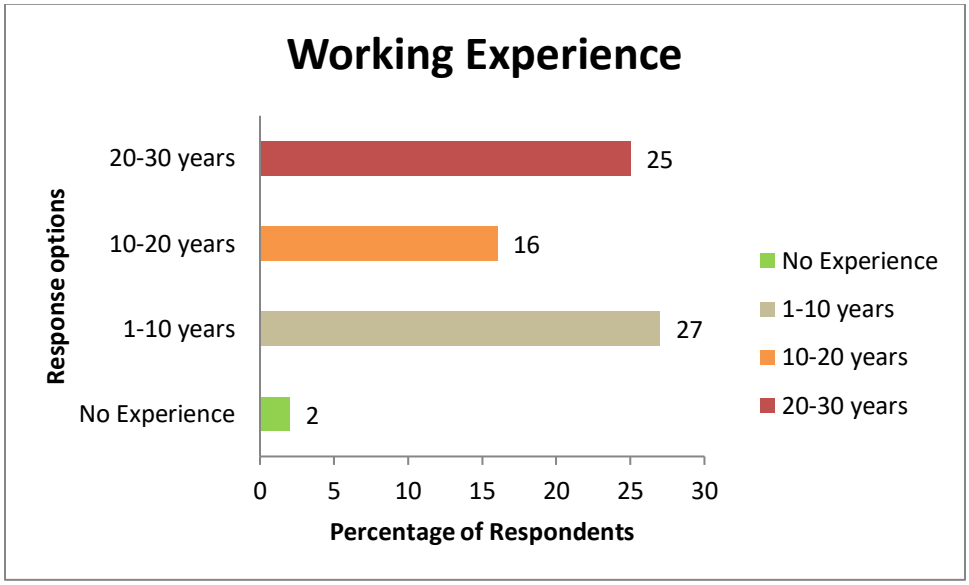



**Inference 5.4:**

Majority of doctors surveyed 46 were medical graduates, very few 12 were specialist and only 12 were super specialist

**Table 5.5: Working Experience of doctors**

| | |
|---|---|
| No Experience | 2 |
| 1-10 years | 27 |
| 10-20 years | 16 |
| 20-30 years | 25 |

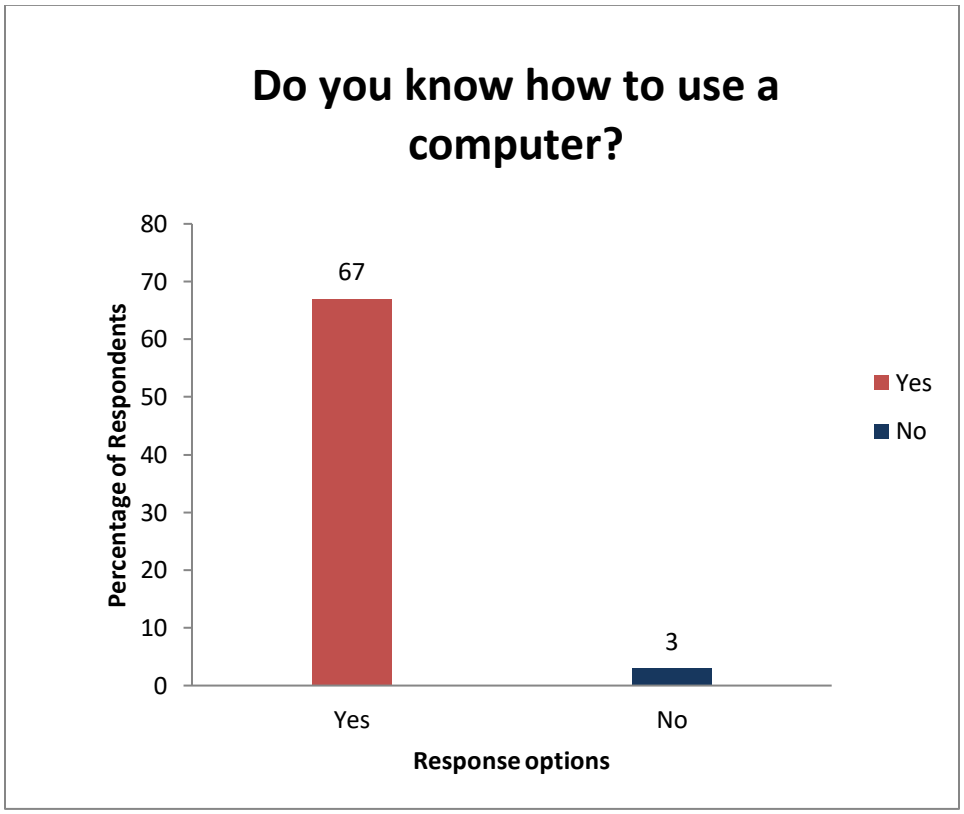



**Inference 5.5:**

Majority of doctors surveyed 27 were having 1-10 years of experience, 25 were having 20-30 years of experience , 16 were having 10-20 experience and only 2 were having no experience

**Table 5.6: Do you know how to use a computer?**

| | |
|---|---|
| Yes | 67 |
| No | 3 |

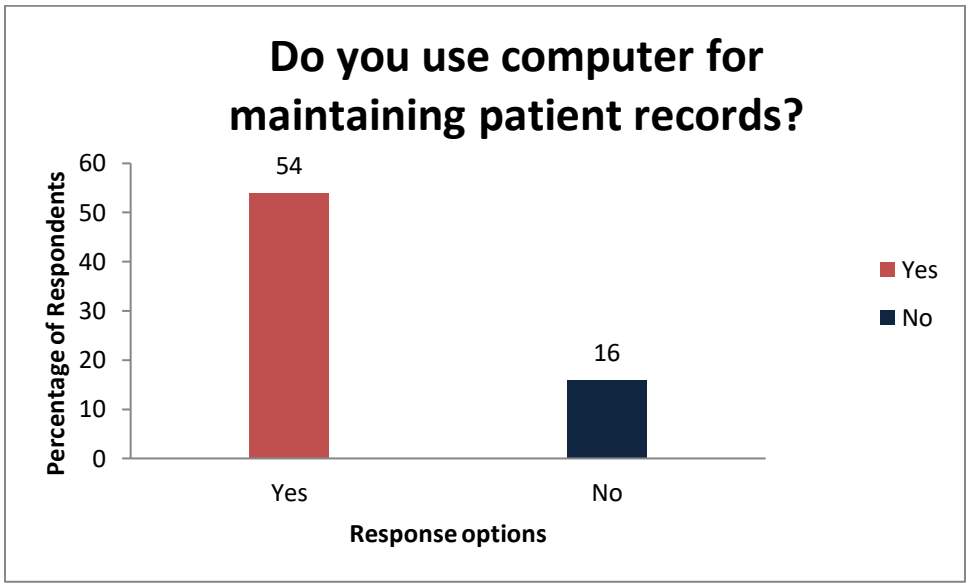



**Inference 5.6:**

Majority of doctors surveyed among them 67 know how to use a computer and 3 doctors don't know how to use a computer

**Table 5.7: Do you use computer for maintaining patient records?**

| | |
|---|---|
| Yes | 54 |
| No | 16 |

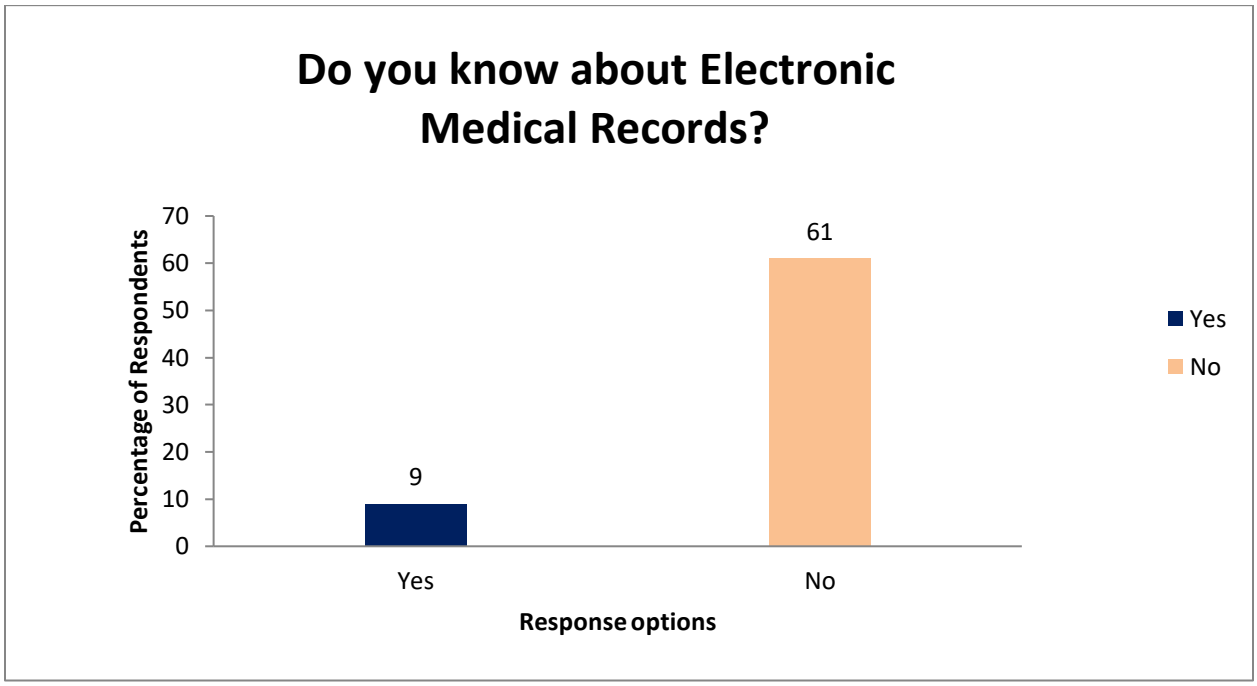



**Inference 5.7:**

Majority of doctors surveyed among them 54 doctor use computer for maintaining patient records and 16 doctor don't use computer for maintain records.

**Table 5.8: Do you know about Electronic Medical Records?**

| | |
|---|---|
| Yes | 9 |
| No | 61 |

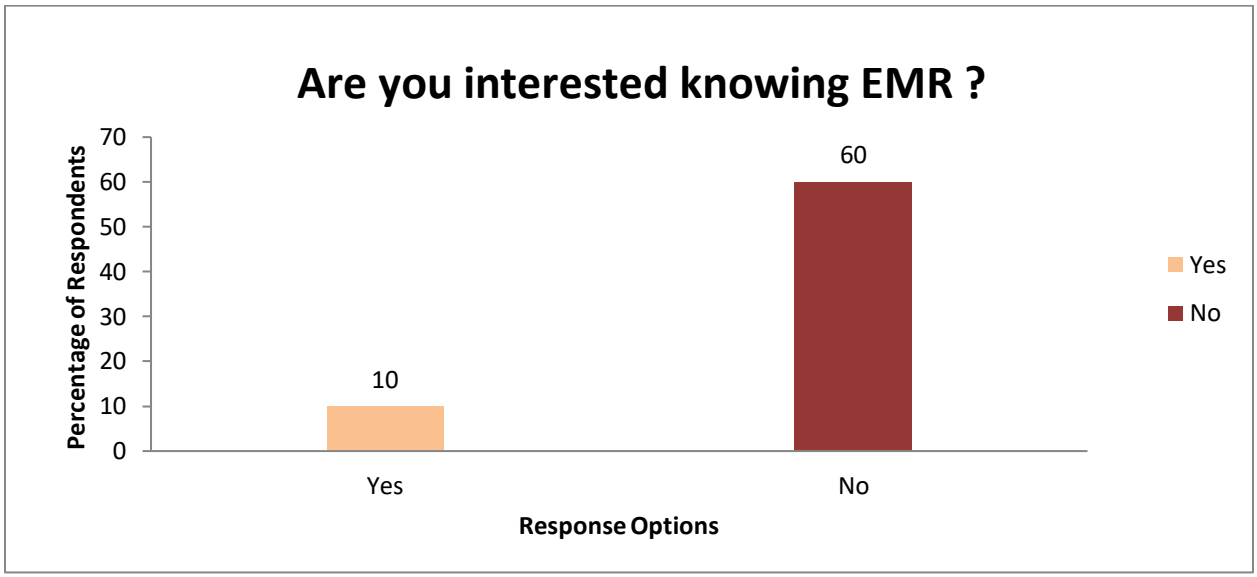



**Inference 5.8:**

Majority of doctors around 61 don't know about EMR and only 9 doctors know about EMR

**Table 5.9: Are you interested knowing EMR ?**

| | |
|---|---|
| Yes | 10 |
| No | 60 |

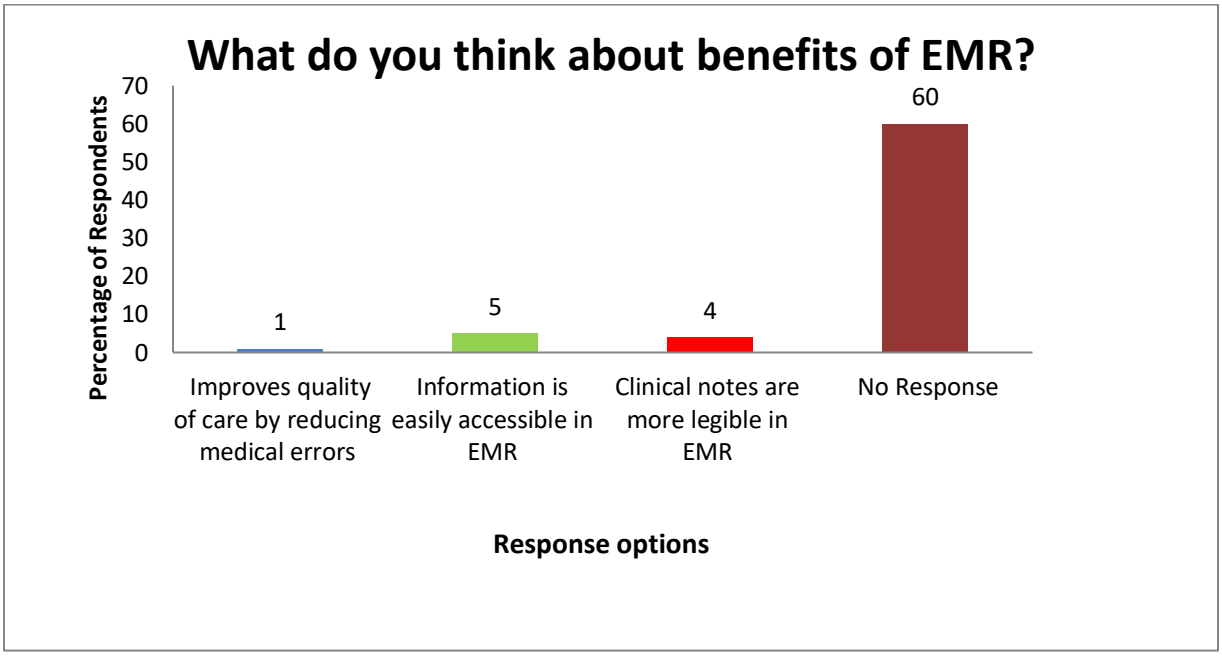



**Inference 5.9:**

The table shows that majority of doctors i.e 90 were not interested and only 10 doctors were interested knowing about EMR.

**Table 5.10: What do you think about benefits of EMR?**

| | |
|---|---|
| Improves quality of care by reducing medical errors | 1 |
| Information is easily accessible in EMR | 5 |
| Clinical notes are more legible in EMR | 4 |
| No Response | 60 |




**Inference 5.10:**

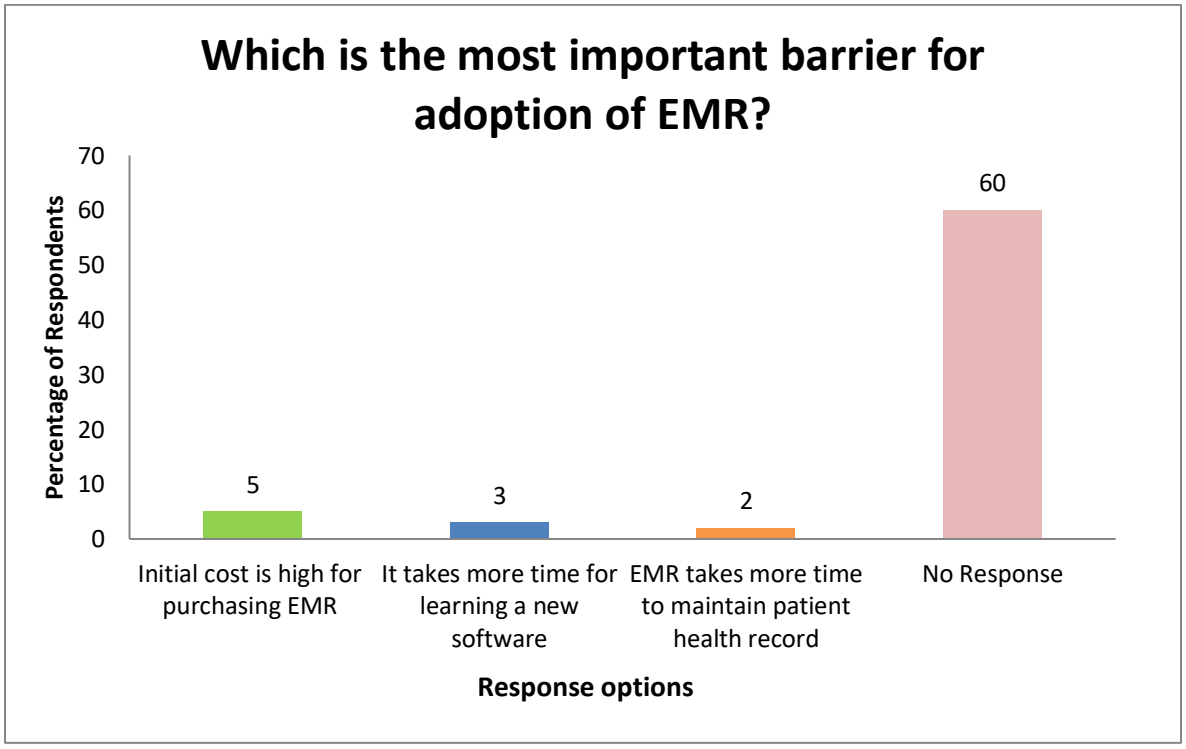
The table shows that majority of 60 doctors doesn't know about benefits of EMR, only 5 doctors thought that information is easily accessible in EMR, 4 doctors thought that clinical notes are more eligible in EMR and 1 doctor thought that it improves quality of care by reducing medical errors.

**Table 5.11:**What do you think can increase EMR adoption among doctors?(Please specify)

| |
|---|
| Educate physicians about EMR |
| Provide training sessions to physicians |
| Awareness programmes about EMR among physicians |
| Demos about the EMR should be given to the physicians |
| Provide hands on training sessions for doctors |
| Educate physicians about EMR |
| Show profitable examples of EMR Adoption |

**Table 5.12:** Which is the most important barrier for adoption of EMR?

| | |
|---|---|
| Initial cost is high for purchasing EMR | 5 |
| It takes more time for learning a new software | 3 |
| EMR takes more time to maintain patient health record | 2 |
| No Response | 60 |




**Inference 5.12:**

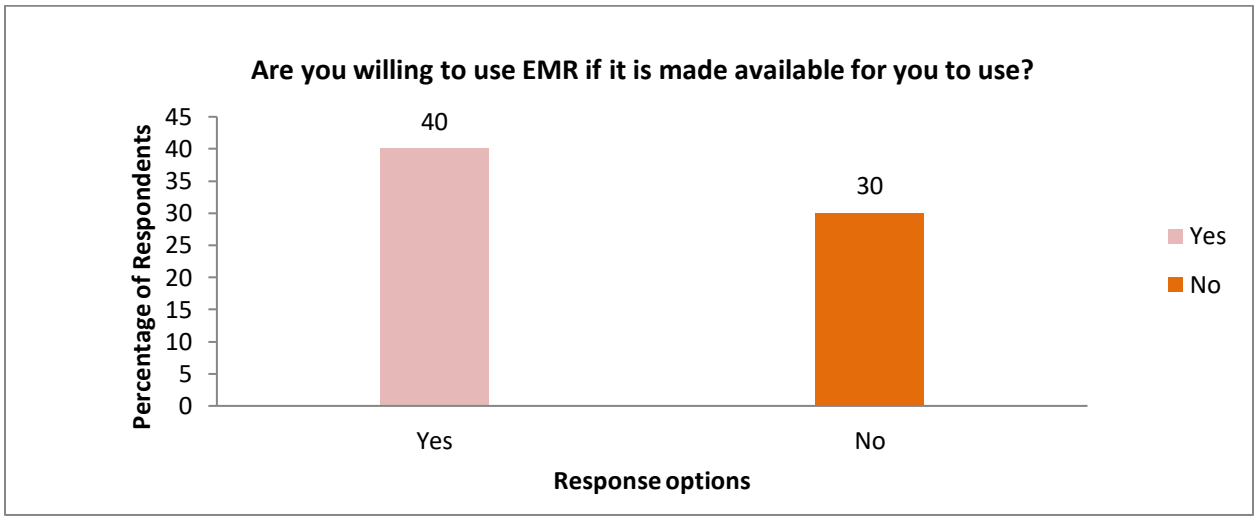
Majority of doctors 60 doesn't responded, among them 5 doctors thought that initial cost is high for purchasing EMR, only 3 doctors responded that it takes more time for learning a new software and 2 responded that EMR takes more time to maintain patient health record.

**Table 5.13:** What other element would be barrier for EMR adoption?(Please specify)

| |
|---|
| Complexity of the EMR |
| Uncertainity of return on investment |
| Not userfriendly |
| Privacy and security concern |
| Longer time for implementation |
| Lack of computer skills |

**Table 5.14:** Are you willing to use EMR if it is made available for you to use?

| | |
|---|---|
| Yes | 40 |
| No | 30 |

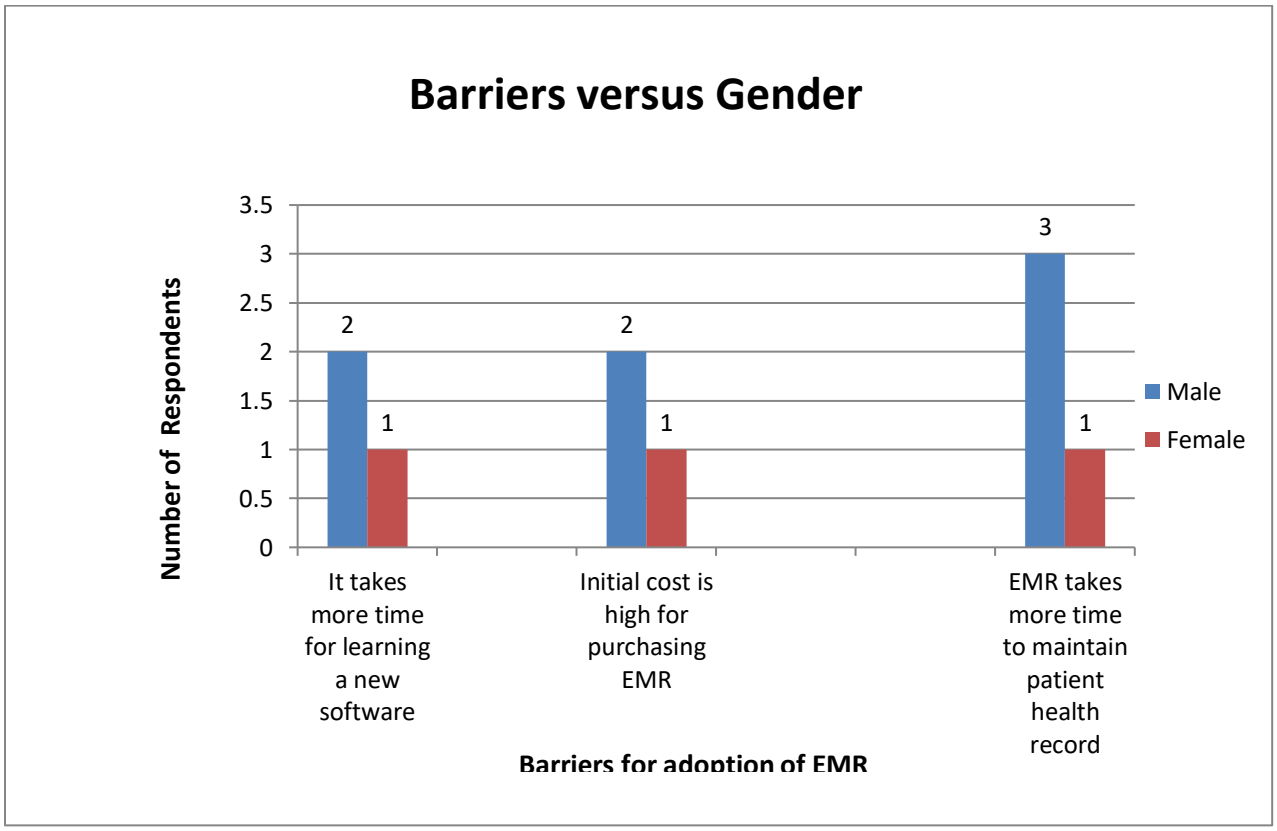



**Inference 5.14:**

Majority of doctors, 40 were willing to use EMR and 30 were not interested.

**Table 5.15: Barrier for adoption of EMR and Gender**

| Barriers | Male | Female |
|---|---|---|
| It takes more time for learning a new software | 2 | 1 |
| Initial cost is high for purchasing EMR | 2 | 1 |
| EMR takes more time to maintain patient health record | 3 | 1 |




**Inference 5.15:**

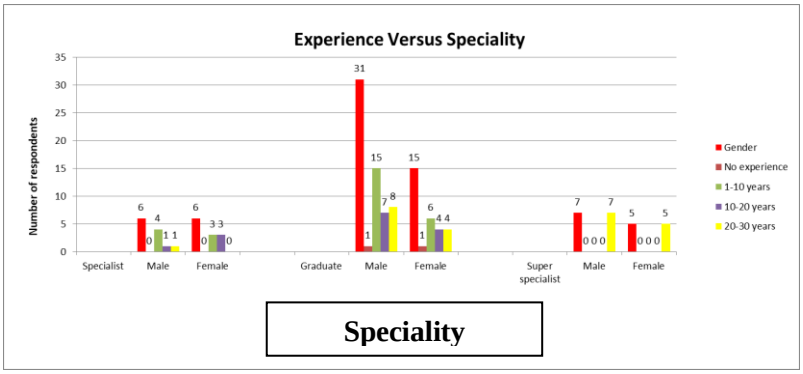
Majority of doctors thought that EMR takes more time to maintain patient health record, 3 doctor responded were male and 1was female.

Doctors thought that initial cost is high for purchasing EMR, 2 were male and only 1was female.

Doctors thought that it takes more time for learning a new software, 2 were male and only 1 was female.

**Table 5.16: Working Experience of Doctor and Speciality**

| Qualification | Gender | No Experience | 1-10 years | 10-20 years | 20-30 years |
|---|---|---|---|---|---|
| **Specialist** | | | | | |
| Male | 6 | 0 | 4 | 1 | 1 |
| Female | 6 | 0 | 3 | 3 | 0 |
| **Graduate** | | | | | |
| Male | 31 | 1 | 15 | 7 | 8 |
| Female | 15 | 1 | 6 | 4 | 4 |
| **Super specialist** | | | | | |
| Male | 7 | 0 | 0 | 0 | 7 |
| Female | 5 | 0 | 0 | 0 | 5 |

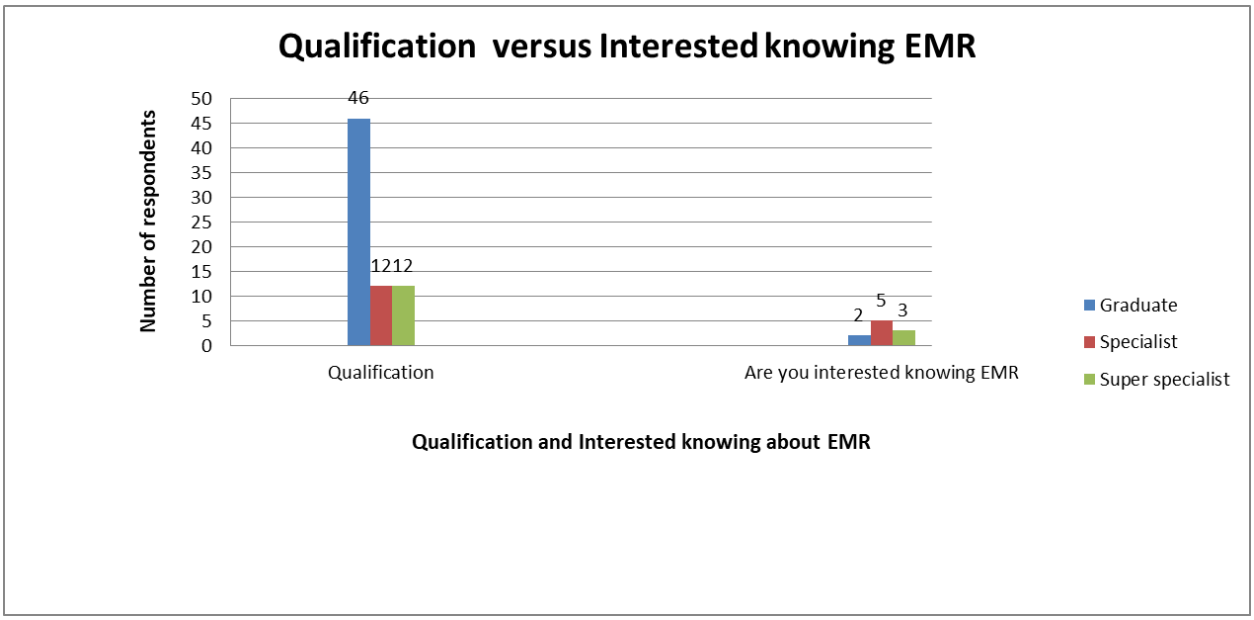



**Inference 5.16:**

Majority of doctors, 31were male that are graduates and among them 15 doctors were having 1-10 years of experience, 8 were having 20-30 years of experience ,7 were having 10-20 years of experience and 1doctor was having no experience whereas 15 were female that are graduates and among them 6 doctors were having 1-10 years of experience, 4 were having 20-30 years of experience,4 were having 10-20 years of experience and 1doctor was having no experience. Therefore males those were graduate and having experience of 1-10 years having more working experience than females.

**Table 5.17: Qualification and Number of doctors interested knowing about EMR**

| Qualification | Graduate | Specialist | Super specialist |
|---|---|---|---|
| | 46 | 12 | 12 |
| Are you interested knowing EMR | 2 | 5 | 3 |




**Inference 5.17:**

Majority doctors 46 were graduate and out of them only 2 were interested,

12 doctors were specialist and out of them 5 doctors were interested and 12 doctors were super specialist and out of them 3 doctors were interested.

# 6. CONCLUSIONS

- From the study conducted it has been found that, in spite of being a very early adaptor in the field of HIT, the penetration of IT in the healthcare industry is still very low as compared to other industries.
- It has been observed that majority of medical graduates are not familiar with EMR function and benefits only few know about it
- From the above study it has been observed that gender, age, area of practice has no association with familiarity of doctors with EMR function and benefits.
- Majority of doctors participated in study were having working experience 1-10 years, mostly doctors have 20- 30 years of experience and there were very few doctors having no experience.
- Majority of doctors those were interested in benefits of EMR thought that information is easily accessible, mostly thought that clinical notes are more legible and very few thought that it improve quality of care by reducing medical errors.
- Various reason for increase EMR adoption were educate physician about EMR, provide training sessions and show profitable examples for EMR adoption.
- Various barriers for EMR adoption were majority of doctors said that initial cost is high for purchasing EMR ,more time for learning software and very few said that EMR takes more time to maintain patient record while other barriers include complexity of EMR not user friendly and longer time for implementation.
- From the above study it has been found that majority of doctors agree that high investment, lack of financial resources, uncertainty on ROI and privacy & security are the major barriers in adoption of EMR.

# 7. RECOMMENDATIONS

- Provide documentation on return on investment.
- Educate physicians and support ongoing training
- Customization
- Promote and communicate reliability & availability of the system.
- Provide training sessions to familiarize physicians
- Communicate on safety and security of issues
- Discuss usefulness of EMR
- Demonstrate ease of use
- Start with voluntary use
- Discuss advantages and disadvantages of EMR to doctors

# 8. LIMITATIONS

Our study had a sample size of seventy which was a very small number due to less time available with doctors for drawing any conclusions that are significant. Also the study was about electronic medical record which many people were unaware. This limited scope of study and an obstacle in finding a trend and a meaningful relationship. Citing prior research studies took that there were very less studies and information on our research topic which limited to further draw conclusions. The data got skewed as the data findings got affected by more of male doctors .Due to less budget allocation we could only go for surveys mailed to doctors which further constrained the sample response.

# 9. REFERENCES


- Boonstra, A., & Broekhuis, M. (2010, August 06). Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2924334/
- Li, K., Naganawa, S., Wang, K., Li, P., Kato, K., Li, X., . . . Yamauchi, K. (2012, October). Study of the cost-benefit analysis of electronic medical record systems in general hospital in China. https://www.ncbi.nlm.nih.gov/pubmed/22212632
- Mehta, N., & Pandit, A. (2017). Perceptions of EMR System by Doctors in Pune (India). Indian Journal of Public Health Research & Development, 8(4), 540. doi:10.5958/0976-5506.2017.00396.5
- Sood, S. P., Nwabueze, S. N., Mbarika, V. W., Prakash, N., Chatterjee, S., Ray, P., & Mishra, S. (2008). Electronic Medical Records: A Review Comparing the Challenges in Developed and Developing Countries. *Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS 2008)*. doi:10.1109/hicss.2008.141
- Healthcare records going E-way-Bindu Gopal Rao: An abstract from Life Science India edition Aug-Sep 2012
- Reaping the benefits of electronic medical records-Davis,Michael W,Healthcare Financial Management 47.6(Jun1993):60-2,64,66

## 10. (Questionnaire)

## FEEDBACK FORM

**Survey**

**Evaluation of Electronic Medical Records Adoption by Doctors in Faridabad (Haryana) – Survey**

Hi,I am a student of PGDHM at IIHMR ,New Delhi. We are undertaking a research project to know the doctors view point about EMR adoption. This questionnaire is designed to understand the perception of doctors towards the barriers and challenges in adopting electronic medical records in their work. This will help us to know to analyze the level of awareness of doctors towards electronic medical records, their use and benefits. Filling of this form will take 15 minutes out of your valuable time. This information will be of great help for research .Thank You

| | | |
|---|---|---|
| 1 | Name of the Respondent | |
| 2 | Gender | |
| 3 | Age (years) | |
| 4 | Location (area of practicing) | |
| 5 | Stream of Medicine | ☐ General Practitioner<br>☐ ENT<br>☐ Gynecology<br>☐ Orthopaedics<br>☐ Opthalmology<br>☐ Pediatrics |

| | | |
|---|---|---|
| 6 | Qualification | ☐ Graduate<br>☐ Specialist<br>☐ Super specialist |
| 7 | Working Experience | ☐ No Experience<br>☐ 1-10years<br>☐ 10-20years<br>☐ 20-30 years |
| 8 | Do you know how to use a computer? | ☐ Yes<br>☐ No |
| 9 | Do you use computer for maintaining patient records? | ☐ Yes<br>☐ No |
| 10 | Do you know about Electronic Medical Records? | ☐ Yes<br>☐ No<br>If No, Skip 16 |
| 11 | Are you interested knowing about EMR? | ☐ Yes<br>☐ No<br>If Yes ,Skip 12 |
| 12 | What do you think about benefits of EMR? | ☐ Improves quality of care by reducing medical errors<br>☐ Information is easily accessible in EMR<br>☐ Clinical notes are more legible in EMR |
| 13 | What do you think can increase EMR adoption | _____ |

| | | |
|---|---|---|
| | among doctors?(Please specify) | |
| 14 | Which is the most important barrier for adoption of EMR? | ☐ Initial cost is high for purchasing EMR<br>☐ It takes more time for learning a new software<br>☐ EMR takes more time to maintain patient health record |
| 15 | What other element would be barrier for EMR adoption?(Please specify) | _____ |
| 16 | Are you willing to use EMR if it is made available for you to use? | ☐ Yes<br>☐ No |