

**AN OBSERVATIONAL STUDY ON PLANNING OF RADIOLOGY
DEPARTMENT IN A NEWLY BUILT HOSPITAL**

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The IIHMR University, Jaipur

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By

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Under the Supervision and Guidance of

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. Isha Rani D/o Mr. Jhamman Singh** has completed her "**Dissertation**" as a part of the course curriculum in the department of **General Administration** at Fortis Hospital, Manesar, Gurugram from **April 01, 2024 to June 30, 2024**.

We wish her all the best in her future endeavors

For **Fortis Hospital, Manesar, Gurugram**



Rahul Khandelwal
Unit Head - Human Resources

DECLARATION BY STUDENT

I hereby declare that this dissertation titled "AN OBSERVATIONAL STUDY ON PLANNING OF RADIOLOGY DEPARTMENT IN A NEWLY BUILT HOSPITAL" Is the bonafide record of my original researchwork. 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.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)

Isha Rani

Date: 06/07/2024.

CERTIFICATE

This is to certify that dissertation titled “**AN OBSERVATIONAL STUDY ON PLANNING OF RADIOLOGY DEPARTMENT IN A NEWLY BUILT HOSPITAL**” is a record of the research work undertaken by **Isha Rani** 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 her approach to the research study has been sincere, scientific, and analytical.

A handwritten signature in blue ink, appearing to read 'Arindam Das'.

Arindam Das, PhD

IIHMR University, Jaipur

Date – 05/07/2024

A handwritten signature in blue ink, appearing to read 'Dr. Sanjay Gupta'.

Dr. Sanjay Gupta

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ABSTRACT

Background

The development of a radiology department in a newly built hospital is a complex process that requires careful planning and execution. Radiology services are critical for medical diagnosis and treatment, utilizing advanced imaging techniques such as MRIs, CT scans, X-rays, ultrasounds, and other modalities. Effective planning ensures that the department operates efficiently, meets safety standards, and provides high-quality patient care.

Research Question

What are the critical factors in planning of a radiology department in a newly built hospital in comparison to a well-established hospital, and what challenges and best practices exist in implementing radiology services?

Objective

The goal of this research is to find out the necessary features and infrastructure for a radiology department, assess the usability and safety of commissioning process and come up with a framework of best practices in planning and commissioning radiology services.

Methodology

This observational study was conducted at Fortis Memorial Research Institute (FMRI) in Gurgaon. The study employed evidence from documents as well as face-to-face interviews with key informants such as radiologists, technologists and administrative personnel. What was gathered focused on planning processes operational challenges and best practices in the radiology department. Then, it was integrated with the literature to develop a set of recommendations.

Conclusion

This research shows that good architectural design combined with effective space use, which decreases travel time by patients due to the improvement in their privacy will lead to higher patient satisfaction levels and greater efficiency.

Furthermore, telemedicine depends upon the selection of modern imaging technology; its maintenance and timely upgrades so that diagnostic service can be of high quality. However, smooth functioning operations require for the challenges facing its technical compatibility as well as integration with other existing systems to continue being upheld. To maintain accuracy in cancer detection tests, there is need for continuous professional development and standardized standard operating procedures (SOPs). For patient protection and staff safety, it is advisable for full radiation safety measures that include having qualified Radiation Safety Officer (RSO) be implemented. A study indicates increased patient flow management through use of advanced scheduling systems, purchase of new imaging tools among other training activities for all the practitioners under discussion including doctors involved or any other health personnel such as nurses who might be found working there (Burns et al., 2012). In addition, radiation safety protocols should be enhanced while reviewing and revising safety policies frequently to ensure a secure environment.

Flexible staffing models complimented by effective resource allocation can mitigate against peak times as well discourage burn out among workers. Therefore, fostering a culture of involvement by engaging all relevant stakeholders in inclusive planning and decision making would result into better solutions. To sum up, enhancing the patient experience generally means creating a patient-centred environment through designing comfortable waiting areas and offering clear explanations on what is done as well as results communicated to the patients.

Keywords: Radiology Department, Hospital Planning, Commissioning, Diagnostic Services, Patient Safety, Best Practices.

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I also want to express my sincere gratitude to my respected university's Placement Cell for helping me with the internship application process and occasionally providing internship guidelines.

I view this chance as a significant turning point in my professional progress. To achieve my intended career goals, I will make every effort to use the knowledge and abilities I have acquired as effectively as I can. I will also keep working to make improvements.

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List of Abbreviations

Sno.	Abbreviation	Full form
1.	CT	Computed tomography
2.	DEXA	Dual energy X-Ray absorptiometry
3.	EEG	Electroencephalography
4.	EMG	Electromyography
5.	MRI	Magnetic Resonance Imaging
6.	PET	Positron emission tomography
7.	RSO	Radiation safety officer
8.	SOP	Standard Operating Procedures

CHAPTER 1

INTRODUCTION

Radiology department in the recently built medical facility is a very important unit that provides both curative and diagnostic interventions required for comprehensive health care delivery. It is the foundation of contemporary medical diagnostic equipped with modern imaging technologies like magnetic resonance imaging, X-ray, computed tomography (CT), nuclear medicine among others. Conversely, this unit holds immense significance in early and accurate diagnosis range from routine check-ups to simple clinical examinations. Thus, through new body imaging techniques doctors can easily identify pathology inside the body, quickly determine atypical manifestations and guide appropriate treatment.

Also, it cooperates with other medical services as well so that they can share their experiences with other specialists to provide integrated therapy plans. In addition, these efforts may enhance patient care.

This means that when there are cases of emergency quick access to radiological services might be crucial for rapid assessment and management decisions that can mean between life and death for a patient.

What is the Radiology Department?

Advanced imaging technologies such as CT, MRI, ultrasound, and X-ray, are used by hospital radiology departments to diagnose and track medical disorders. It is essential for making decisions about treatment, determining how quickly a disease progresses, and assisting in emergency care. Together with healthcare teams, radiologists and technologists deliver accurate interpretations of imaging investigations that improve patient outcomes and treatment. The department further advances knowledge and innovation in diagnostic imaging by acting as a center for medical research and education. All things considered, the radiology department is critical to providing accurate diagnoses, enabling successful treatments, and guaranteeing thorough patient care.

1.2 RESEARCH QUESTION:

- What are the critical factors in planning a radiology department in a new hospital?
- What challenges and best practices exist in implementing radiology services?

1.3 AIM:

This project aims to adopt the best practices for organizing and setting up a radiology department in a recently constructed hospital to improve patient care effectiveness and diagnostic capabilities.

1.4 Objectives:

- To list out the essential components and infrastructure for a radiology department of a newly built hospital.
- To develop a framework for best practices in planning of radiology services.
- To find out the challenges faced by the established hospitals.

Need assessment:

Overview

I carried out a comprehensive need analysis prior to starting the planning and commissioning of the radiology department at Fortis Hospital, Manesar. This required Planned visit to Fortis Memorial Research Institute, Gurugram to see how the radiology department is set up and designed. The knowledge acquired from these visits was crucial in creating Fortis Manesar's strategy and guaranteeing that the new division satisfies the greatest requirements for effectiveness, security, and patient care.

The	Visit's	Goals
Design and Layout:	To determine the best possible design and arrangement for a radiology department that guarantees efficient operations and patient comfort.	
Equipment and Technology:	To investigate the kinds, features, and efficiency of imaging devices utilized in diagnostic processes.	
Discover the Best Practices:	To determine effective tactics and methods for running radiography service operations and management.	

Determine Obstacles: to identify typical problems that arise during the planning and stages and the remedies that are put in place.

Get input from stakeholders: to get opinions and suggestions from administrative personnel, technicians, and radiologists.

Branch Visited:

Fortis Memorial Research Institute, Gurugram,

Table 1.1: Scope of services of Radiology department:

The goal of the department is...	To ensure that radiology services are available and delivered as per patients' needs in a safe and effective manner
The scope and complexity of services provided by this department is...	Radiology department provides round-the-clock services (like x-rays, ultrasound, CT scans etc.) are provided 24x7
The methods used to customize services are....	Scheduling and preparing patients for radiology investigations, conducting investigations and reporting them. Ensuring radiation and general safety
The extent to which the level of care/ services provided meets customer needs are:	All steps are managed as per this SOP, good practice guidelines & statutory regulations

Regulatory agencies relevant to this service...	Atomic Energy Regulatory Board (AERB) Pre Natal-Diagnostic Techniques (PNDT Act)
Staffing plan is...	Radiologist, Technician (Technologist), Nurse, GDA/Housekeeping

CHAPTER 2 LITERATURE REVIEW

S. NO .	AUTHOR NAME & YEAR	TITLE	OBJECTIVE	METHODOLOGY	RESULT
1.	Dalia Eltahlawy, Mahmoud Ahmed Zaki, Marwa Kamar Eldawla (2022)	New Design Guidelines for Diagnostic Radiology Department s at Tertiary Healthcare Facilities	By looking at imaging techniques, IT integration, and design issues, the literature review seeks to improve hospital design efficiency, especially in diagnostic radiology.	IT integration, design issues, and diagnostic radiology techniques are all covered in the qualitative analysis conducted through a review of the literature.	A basic framework to enhance hospital architecture was produced because of the literature research, especially for the diagnostic radiology department.

2.	Anna Maria lerardi, Bradford j. Wood, Antonio Arrichiello, (2020)	Preparation of a radiology department in an Italian hospital dedicated to COVID-19 patients.	The goal is to outline the planning, design, and logistical concerns for a pandemic radiology and critical care unit that will serve COVID- 19 patients.	The COVID- 19 pandemic radiology and critical care units were designed using a descriptive examination of planning, design, and logistical challenges.	Dedicated pandemic radiology and critical care guidelines for COVID-19 patients were developed as a consequence of the literature study.
3.	L.R. Sante (1924)	The New Department of Radiology of the St. Louis City Hospital	The X-ray Department at St. Louis City Hospital is being expanded and modernized to meet the	Mr. Nelson Cunliff, Director of Public Welfare, investigated as part of the technique	By 1924, the St. Louis City Hospital's X-ray department had successfully expanded and modernized because of the literature review.

			growing demand.	used to propose and secure money for department enlargement by comparing X-ray departments around the country.	
4	Roderick McEwin (1970)	An examination of radiology departments	The goal is to pinpoint and address radiology department operational problems that affect general hospital service speed.	The approach is a survey of general hospitals to investigate radiology department operational issues that impact service speed.	The product is a broad analysis of the variables influencing radiology departments' service times; specific methods and findings are covered in a separate article.

5.	Jeanette Henkelmann, Constantin Ehrengut, Timm Denecke (2021)	Restructuring of a Hospital Radiology Department: Subspecialization Between Man, Machine, and Multidisciplinary Board.	Finding ways to integrate sub specialization and adapt hospital radiology departments to changing clinical and technology needs is the goal of this study.	A review of the literature on subspecialized radiology is part of the process, which also includes an analysis of the obstacles hospital management faces in implementing strategic plans for the field.	Hospital radiology departments should be reorganized in accordance with the recommendations of the literature study to incorporate sub specialization and satisfy changing clinical and technology needs.
6	<u>Raymond W. Sze, Satoshi Teshima</u> (2017)	Radiology Design Project Primer	The goal is to enable radiology leadership to work more productively with designers to improve patient-centered treatment by creating an optimally designed	With an emphasis on theme development, design partner selection, and using interdisciplinary teams in healthcare environment design, the technique consists of	By optimizing the design of the healthcare environment, the outcome is a set of actionable guidelines that radiology leadership can use to cooperate with designers and improve patient-centered treatment.

			healthcare environment.	workable guidelines drawn from a survey of the literature.	
7.	Sahni et al. Sullivan and Gilligan (2018)	The difficulties in building and running a radiography department in a recently founded hospital are the subject of discussion.	to evaluate the operational and planning difficulties involved in establishing a radiology department in a recently founded hospital.	To determine planning issues and strategies, hospital administrators, radiologists, and technologists were interviewed as part of a qualitative analysis technique.	For newly established radiology departments, the outcome outlines typical obstacles and workable solutions for infrastructure, equipment acquisition, and regulatory compliance.

8.	Smith et al. (2019)	The subject is assessing how staffing strategies affect the effectiveness and caliber of radiology services provided in recently constructed hospitals.	The effectiveness and caliber of radiology services in recently constructed hospital settings should be assessed in relation to various staffing strategies.	In addition to hospital records and stakeholder interviews, the methodology involves a combination of quantitative analysis and case studies.	The findings revealed the best staffing arrangements for new hospitals in terms of efficiency, radiology service quality, and patient happiness.
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9.	Wang and Chen. (2020)	The topic examines the interoperability, customization, and training issues associated with PACS and RIS integration in recently constructed hospital radiology departments .	Examine the PACS and RIS integration issues in recently constructed hospital radiology departments.	To identify obstacles to PACS and RIS system integration, a qualitative methodology utilizing semi-structured interviews was employed.	The literature analysis pinpointed three main obstacles to PACS and RIS integration: problems with system customization, insufficient user training, and interoperability.
10.	Lee et al. (2021)	Using comparative budget models, the focus is financial planning and cost-effectiveness analysis for the establishment of radiology	to create an analytical framework for financial planning and cost-effectiveness when establishing radiology departments in newly constructed	The financial planning process for the development of radiology departments involves a comparative analysis of budget allocation methods and economic	A framework emphasizing efficient budget allocation models and cost-effective tactics for long-term radiology department planning in healthcare facilities was created by the literature analysis.

		departments in new hospital facilities.	hospital buildings.	evaluations across numerous hospitals.	
11.	E. pelikan, Elmar Kotter, U. Timmermann (2021)	Networks in the radiology department and the hospital.	To build hospital networks that meet the unique requirements of radiology departments, it is necessary to identify the key technologies.	The approach focuses on standards and requirements unique to radiology departments by providing a descriptive overview of fundamental technologies for hospital network construction.	Integrity with radiology departments is emphasized in the literature evaluation, which lists key technologies for strong hospital networks. It talks about future object-oriented healthcare applications (CORBAmed), as well as interoperability standards for XML, DICOM, and HL7. Facilitating unified electronic health records and effective hospital workflows is the aim of directing IT infrastructure design.

CHAPTER 3

METHODOLOGY

Study Setting

This study is conducted in a well-established hospital: Fortis Memorial Research Institute (FMRI) in Gurgaon. The hospital is renowned for its advanced healthcare facilities and comprehensive radiology department. The settings provide a rich context for observing and comparing the planning and operational challenges and best practices in the radiology departments.

Type of Study

This dissertation uses an observational study design that focuses on an in-depth look at the planning processes challenges best practices in radiology department. The observational study allows for intensive real time analysis of how these operations are run and what strategies they employ.

Source of Data

The primary data sources for this study include:

Direct Observations: These involved site visits to FMRI Gurgaon where I observed the layout, workflow and day-to-day operations within the department identical morphologically but was completely different from those mentioned above (Burns et al., 2012).

Semi-structured interviews are conducted with key stakeholders, for instance radiologists, radiology techs, hospital administrators and planners that were involved in the establishment as well as ongoing management of the department.

Documentation: Review of relevant documents such as floor plans, equipment lists, regulatory compliance reports, and internal reports on radiology department operations and planning.

Secondary Data: The literature regarding best practices and challenges encountered during planning stage for a radiology department obtained from scholarly articles found in academic journals, industry report or even other hospital case studies

Research Area

The research is done on the following:

Planning Processes: Examining how the radiology department was conceptualized, designed, and set up including technology selection, space planning and integration with other hospital services.

Operational Challenges: Identifying key issues faced during planning/ commissioning phases such as logistical problems; adherence to regularity requirements; resource allocation etc.

Best Practices: Documenting strategies/practices that have been successful in overcoming challenges and optimizing functionality/efficiency of the radiology operations

Data Collection Methods

Direct Observations: Conduct systematic observations during site visits, noting layout of Radiology departments including workflow within these departments as well as interactions occurring there-in while ensuring all relevant aspects are covered using a checklist.

Interviews: Develop a semi-structured interview to elicit detailed insights from radiology department. Record and transcribe interviews for analysis.

Document Analysis: Collect and review relevant documents to gather background information and context. Analyze these documents to identify patterns and insights related to planning and operations.

Literature Review: Conduct a comprehensive review of existing literature on radiology department planning and best practices to provide a theoretical framework for the study.

Data Analysis

Qualitative Analysis: Carry out thematic analysis of the interview transcripts and observation notes to unearth common themes, challenges, and best practices.

Synthesis of Best Practices: Merge findings from the observational study and the literature review to develop a set of best practices towards planning a radiology department in a newly conceptualized built hospital.

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CHAPTER – 4

RESULT

Best practices and important results

Style and Arrangement

Space Utilization: Involves creating different spaces for staff operation, imaging as in addition to waiting for the maximum on the space available. This kind of plan will increase privacy while reducing the movement of patients.

Patient Flow: Good placement with the imaging rooms, patients waiting areas, waiting areas that are attractive, and signage that is clear allowed the smooth flow of patients.

Safety Features: Among these may include lead-lined doors and walls, and control rooms where the technologists can safely observe the procedures without exposure to unnecessary levels of the radiation.

Radiation Safety Officer (RSO): A certified Radiation Safety Officer with the right built in implement and control the radiation protection program.

Safety Protocols: Includes overall radiation safety protocols as well as safe operating procedure for all radiological equipment

Equipment and Technology

Table 4.1: Radiology imaging equipment of Fortis Manesar in Comparison To FMRI

Sr. No.	Fortis Manesar	FMRI
1	Upgrade pf CT-128 slice (Phillips)	CT- 1228 slice
2	Anaesthesia Machine	Anaesthesia machine
3	Ultrasound Machine, Resona I9	GE Ultrasound machine
4	Ultrasound Machine, Venue Go	Phillips ultrasound machine
5	X-ray Machine (DR) siemens	X ray siemens
6	Ultrasound Machine siemens	Ultrasound siemens
7	Battery CT Scan UPS	Battery CT Scan UPS
8	MRI Machine Phillips	MRI Siemens
9	MRI - Pressure Injector, Fire Extinguisher, Wheelchair, Stretcher, IV Stand, Monitor	MRI - Pressure Injector, Fire Extinguisher, Wheelchair, Stretcher, IV Stand, Monitor
10	MRI-UPS, UPS Battery	MRI-UPS, UPS Battery
11	Wheelchair F12	Wheelchair F12
12	Dual Energy X-ray Absorptiometry Scan Machine (Hologic)	Dexa Scan (Hologic)
13	Mammography	Mammography siemens
14	X-ray Machine (Fluoroscopy) siemens	X ray Fujifilm

Maintenance and Upgrades: The emphasis here is on routine maintenance schedules and timely upgrades to retain high efficiency for equipment, along with high diagnostic quality.

Top Techniques

Staff Training: Continuous training programs had been put in place; radiologists, along with technicians, were acclimated to the very recent methods and technologies available. These are standard operating procedures, or SOPs, that are clearly specified for each imaging modality to ensure consistency with image quality and excellent diagnostic results.

Patient care: A good scheduling system ensured good care to the patients since the system provided transparency in time communication with the patients about the process.

Exposure Monitoring

Dosimetry: Inculcate dosimetry with a personal dosimetry system involving devices as per the radiation protection monitoring system. Maintain the average reading record.

Occupational Dose Limits: The occupational limits should be kept and ensured. Workflow Accuracy: Ensured by employing more workers at peak hours and making the process of scheduling appointments easier.

Technical Issues: By working with vendors who have rapid response times and employing redundant systems, it was possible to minimize equipment downtime.

Table 4.2: Maximum permissible dose

	OCCUPATIONAL EXPOSURE	PUBLIC EXPOSURE
OVERALL	30mSv in a single year	1mSv/year
PREGNANT WOMEN	2mSv/year	1mSv/year
FETUS	1mSv/year	0.5mSv/year

Workflow Efficiency: maintained by speeding up appointment scheduling and adding extra employees during peak periods.

Technical Issues: Reducing equipment downtime was made possible by having backup systems and service contracts with quick response times.

Feedback from Stakeholders

Radiologists: They stressed on continuous professional development as well as recent types of machines to be used in their workplace.

Technicians: They said that imaging rooms require ergonomic design to reduce physical strain while enhancing operational efficiency.

Administrative staff: To optimize operations, they claimed that cross-departmental collaboration and the establishment of effective lines of communication were necessary.

Challenges:

It is one of India's prominent health care facilities for radiology FMRI Fortis Memorial Research Institute at Gurugram. Notwithstanding, there are very many challenges faced by the patients and administrative staff that will likely impact the efficiency and effectiveness of the radiology services offered at the facility. Here are some notable challenges experienced.

Challenges Faced by Patients

Long Wait Times: People have noted that the time spent waiting at FMRI Gurugram is rather large while observing. This may result in rose-painted problems if the waiting time grows during imaging appointments and their results. This delay tends to bring out more and more stress during the wait for important medical results.

Barriers to Communication: It is not easy for a patient to grasp medical terminologies while elaborating on radiological findings. The use of those terminologies is rather confusing for people concerning healthcare information.

Access and Mobility Issue: Elderly patient or physically disabled person who has an observed hard time reaching the radiology department due to the size and structure of the facility.

Financial Constraints: a lot of people cannot afford modern imaging even when covered by insurance because most of these facilities are out of their insurance coverage. Financial barriers contribute to late diagnosis, delay in treatment, or both.

Emotional Stress: Operations and other medical procedures make a patient feel emotionally tired and drained since so much surveillance is called to be done, primarily so if one suffers from a life-threatening condition or a chronic illness.

Challenges faced by administrative staff:

Workflow Management: A good workflow management system, at its helm, houses appointment tracking, patient flow control, as well as timely delivery of imaging data. Good workflow management is many times found to be elusive at FMRI Gurugram due to a shortage of human resources.

Technological integration: It is a logistical and budgetary matter that comes into play with the integration of new imaging technologies, hence keeping equipment up to date; always consider worker productivity with interoperability with existing systems.

Regulatory Compliance: This involves keeping in line with constantly changing regulations that make sure safety procedures are adhered to. Therefore, regular audits and proper documentation are required. This, however, was not possible always due to staff shortage.

Resource Allocation: The management of human resources such as radiologists, technicians and support staff effectively become impossible regardless of the demand of imaging services. Normally existing employees get overwhelmed and therefore burned out due to the insufficiency of employees with required skills.

PATIENT COMMUNICATION

Patient communication is essential, but it often gets obstructed due to high patient volume and various communication requirements. To guarantee care what there is an unobstructed flow information reaching patients; appointments, preparation for imaging procedures and follow-up care are essential.

DATA MANAGEMENT

Data Management is a significant challenge given the volume of imaging data involved, its security and ease of access by clinicians while still maintaining patient confidentiality.

CHAPTER: 05

DISCUSSION

RESULTS INTERPRETATION

The study was an observation about the planning of a radiology department in a newly built hospital, which highlighted several key lessons on such a complex and critical activity. The results demonstrate that careful attention to spatial use, workflow efficiency, measures for safety, as well as stakeholder engagement is required. In this regard we would discuss these findings extensively, comparing them with other relevant studies and identifying the strengths and limitations of this study.

COMPARING RESULTS WITH OTHER STUDIES

SPACE UTILIZATION AND WORKFLOW EFFICIENCY

Our research showed that appropriateness in space utilization coupled with streamlined workflow is fundamental to the functionality of a radiology department. For this reason, it should be designed to enhance movement of patients and service providers alike at all costs while minimizing waiting time, allowing privacy. Decisive space planning will lead to effective operation thereby reducing stress among patients as Sahni et al (2018) found out. Her survey shows the necessary areas for each imaging modality and signs that can direct one where he or she wants to go hence our observation at Fortis Memorial Research Institute (FMRI).

EQUIPMENT AND TECHNOLOGY

For success in a radiology department choice and maintenance activities for imaging equipment are very crucial. According to our study routine maintenance activities must be implemented accordingly to ensure good quality diagnostic outcomes. This has been confirmed by Wang & Chen (2020), who have indicated that technology integration along with equipment maintenance has major implications on the effectiveness of a radiology department. Moreover, they argue against integrating new technologies into the already existing systems thus supporting my first argument on the PACS and RIS integration problems faced by FMRI.

STAFF TRAINING AND STANDARD OPERATING PROCEDURES (SOPs)

According to our research study, uniformity in reporting high diagnostic findings calls for consistent training of radiologists and technicians coupled with standard operating procedures implementation. This is supported by Smith et al (2019), who established that clearly defined SOPs and regular training sessions significantly improve the efficiency and precision of radiological services. Moreover, they also argued that ergonomic designs in imaging rooms would reduce workloads on these technologists; an opinion which stakeholders at FMRI strongly concurred with.

STUDY'S STRENGTHS

Comprehensive Data Collection: The research involved direct observations, interviews, document analysis among other techniques to provide a multifaceted understanding of challenges faced during planning and operationalization of a radiology department.

Stakeholder Involvement: A broad range of stakeholders including radiologists, technicians as well as administrators were included to address divergent views resulting in more robust findings.

Practical Insights: It offers practical insights and best practices which can be directly applied to future projects making it highly relevant for hospital administrators and planners.

LIMITATIONS OF THE STUDY

Single Location: As such, the study was confined to one hospital only thereby restricting its applicability to different settings. Other hospitals will tend to have unique situations arising from their respective environments.

Time Restraints: The duration of the research was quite short which may not have allowed long-term problems and solutions in relation to the operations of radiology department to be witnessed.

Technological Revolution: Rapid progress made in imaging technology implies that some findings concerning equipment's and technology can swiftly become obsolete.

Presentation of Findings

Flow and Experience for Patients

The planning process put a lot of emphasis on having an efficient patient flow. By placing the imaging rooms and waiting areas strategically, the hospital aimed at reducing movement as well as waiting time for patients. This not only improves patient experience but also enhances operational efficiency. According to this study, offering clear signages and comfortable waiting places can highly reduce anxiety experienced by patients, a finding that is being corroborated with literature on patient-centered care (Sahni et al.

CHAPTER 6:

CONCLUSION

This study of how to plan a radiology department in a newly built hospital has shown that there are several things you need to do if you want the place to work well. Among these are efficient space use and careful layout design, which were found to be critical by allowing for minimum patient movement times, shorter waiting periods and increased privacy hence leading into better patient experiences as well as operational efficiency.

Ideally, this research called for diverse input from various quarters to ensure that the stakeholders involved during planning stages are not only radiologists but also technicians amongst others lest they make wrong judgments or forget some vital concerns. In order to be in a better position with more of these suggestion, we can improve the department's existing range by employing a few strategies described below; Systematic patient flow management through modernized booking systems would cut down on waiting times and optimize throughput rates too; Moreover, more investment into present diagnostic imaging approaches is required for enhancing its integration with what already exists hence improving effectiveness of operations and services rendered; On-job training has been acknowledged as useful particularly for those who interpret images because as time passes by new machines are manufactured thus requiring different capacities per period before another model arrives into market which calls for frequent learning of these changes by techs otherwise they will be outdated within a short time.

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