

**“TO ASSESS THE AWARENESS OF THE RADIATION
SAFETY AND HAZARDS AMONG HEALTH CARE
PROFFESIONALS”**

By
Ms. KAJAL KAMARAJ CHAVAN

REG NO: 22MHA03

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In partial fulfillment of the requirements for the degree of

MASTER OF HOSPITAL ADMINISTRATION

**UNDER THE GUIDANCE OF
DR. VIJAYAKUMAR.T. KALYANAPPGOL
HEAD OF DEPARTMENT
HOSPITAL ADMINISTRATION**

**SHRI B.M. PATIL MEDICAL COLLEGE, HOSPITAL &
RESEARCH CENTRE, VIJAYAPUR, KARNATAKA**

2024

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Date:

Place: Vijayapura

Ms. KAJAL KAMARAJ CHAVAN

Reg No: 22MHA03

Post Graduate Student,

Department of Hospital Administration

**BLDE (DEEMED TO BE UNIVERSITY),
SHRI B.M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH
CENTRE, VIJAYAPURA**

CERTIFICATE BY THE GUIDE

This to certify that the dissertation entitled **“TO ASSESS THE AWARENESS OF THE RADIATION SAFETY AND HAZARDS AMONG HEALTH CARE PROFFESIONALS”** is a bonafide research work done by Ms, **KAJAL KAMARAJ CHAVAN** under my overall supervision and guidance, in partial fulfillment of the requirements for the degree of Master of Hospital Administration.

Date: 28/09/2024

Place: Vijayapura

DR. VIJAYAKUMAR.T. KALYANAPPGOL

Professor and Head

Department of Hospital Administration

**BLDE (DEEMED TO BE UNIVERSITY),
SHRI B.M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH
CENTRE, VIJAYAPURA**

ENDORSEMENT BY THE HEAD OF DEPARTMENT

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Date:

Dr. VIJAYAKUMAR.T. KALYANAPPGOL

Place: Vijayapura

Professor and Head

Department of Hospital Administration

**BLDE (DEEMED TO BE UNIVERSITY),
SHRI B.M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH
CENTRE, VIJAYAPURA**

ENDORSEMENT BY THE PRINCIPAL

This to certify that the dissertation entitled “**TO ASSESS THE AWARENESS OF THE RADIATION SAFETY AND HAZARDS AMONG HEALTH CARE PROFFESIONALS**” is a bonafide research work done by **Ms. KAJAL KAMARAJ CHAVAN** under the guidance of **Dr. VIJAYAKUMAR .T. KALYANAPPGOL (PROFESSOR & HOD)** Department of Hospital Administration BLDE (Deemed to be University) Shri. B. M. Patil Medical College Hospital and Research Centre, Vijayapura.

Date: 28/09/2024

Place: Vijayapura

Dr. SHANKAR V PATIL

DEAN OF ALLIED HEALTH SCIENCE

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Date:

Ms. KAJAL KAMARAJ CHAVAN

Place: Vijayapura

Reg No: 22MHA03

Post Graduate Student,

Department of Hospital Administration

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Date:

Ms. KAJAL KAMARAJ CHAVAN

Place: Vijayapura

LIST OF ABBREVIATIONS USED

IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
ALARA	As low as reasonably achievable
AERB	Atomic Energy Radiation Board
IRPA	International Radiation Protection Association
TLD	Thermoluminescent dosimeter
ALADA	As Low As Diagnostically Acceptabl
LNT	Liner no Threshold

ABSTRACT

Radiation security is generally called radiological protection and is portrayed by the Worldwide Thermal power Agency(IAEA) as "The confirmation of people from frightful effects of receptiveness to ionizing radiation"(1).Radiation affirmation is the justification for the prosperity of the two patients and clinical staff during radiographic frameworks, as a result of its unpleasant effects tended to through malignant growth causing nature and skin disorder(2,3).The Worldwide Commission on Radiological Security (ICRP)stated that a cognizance and experience with the risks of radiation among clinical staff can thwart futile risks forward people as a whole(4,5).Every year, endless researchers show stress over radiation sources and the effects that occurred by it all over the planet. 80% of our receptiveness to ionizing radiation comes from typical wellsprings of which radon gas is overwhelmingly the most basic, while the other20% comes from man-made sources, mainly clinical X-beams (6,7,8). While reports from studies displayed a sensational climb in the inescapability of negative prosperity impacts following receptiveness to ionizing radiation throughout recent many years (9,10) the documented confirmation of lamentable data of radiation security among various units of prosperity workers in danger of word related transparency shows the enormity of the issue at and (11,12,13). Subsequently, the data on radiation risks and the point of convergence for radiation security considering this speculation that is 'the ALARA thought' this includes that radiation transparency is diminished to 'As Low as Really Achievable (ALARA)' however not outperforming the end on strong piece proposed by the Overall Commission on Radiological Protection (ICRP).The Worldwide Commission on Radiological Protection(ICRP) and thermal power managerial board (AERB) has suggested Radiological protection guidelines.

The overall knowledge assessment, based on a sample size of 420 participants, revealed that the total correct answers ranged from 13 to 20, with a mean score of 16.79 and a standard deviation of 1.782. The Mann- Whitney U test indicated no significant difference, with a p-value of 0.148. Additionally, the total wrong answers ranged from 0 to 7, with a mean score of 3.21 and a standard deviation of 1.782 of the study to assess the awareness of the radiation safety and hazards among the health care professionals.

Conclusion: The assessment of radiation safety and hazard awareness among healthcare professionals, based on a sample of 420 participants, revealed that the correct answers ranged

from 13 to 20, with a mean score of 16.79 and a standard deviation of 1.782. The Mann-Whitney U test indicated no significant difference, with a p-value of 0.148. Additionally, the wrong answers ranged from 0 to 7, with a mean score of 3.21 and a standard deviation of 1.782. This suggests a moderate level of knowledge among healthcare professionals regarding radiation safety and hazards, with no significant variation in scores.

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Introduction

INTRODUCTION

Radiation security is otherwise called radiological insurance and is characterized by the Global Nuclear Energy Agency(IAEA) as "The assurance of individuals from hurtful impacts of openness to ionizing radiation"(1).Radiation assurance is the reason for the wellbeing of the two patients and clinical staff during radiographic systems, because of its unfriendly impacts addressed via cancer-causing nature and skin disorder(2,3).The Global Commission on Radiological Security (ICRP)stated that a comprehension and familiarity with the dangers of radiation among clinical staff can forestall pointless dangers forward populace as a whole(4,5).Every year, countless scientists show worry about radiation sources and the impacts that happened by it around the world. 80% of our openness to ionizing radiation comes from normal wellsprings of which radon gas is by a wide margin the most critical, while the other20% comes from man-made sources, principally clinical X-rays (6,7,8). While reports from studies exhibited a dramatic ascend in the pervasiveness of unfavorable wellbeing effects following openness to ionizing radiation over the past two decades (9,10) the archived proof of unfortunate information of radiation security among different units of wellbeing laborers at risk of word related openness shows the tremendousness of the issue at and (11,12,13). Thus, the information on radiation dangers and the focal point for radiation security in view of this supposition that is 'the ALARA idea' this involves that radiation openness is decreased to 'As Low as Actually Attainable (ALARA)' but not surpassing the cutoff on powerful portion suggested by the Worldwide Commission on Radiological Insurance (ICRP).The Global Commission on Radiological Protection(ICRP) and nuclear energy administrative board (AERB) has recommended Radiological insurance standards.

While the utilization of ionizing radiation has changed the clinical field, it is a situation with two sides since it is a likely wellspring of wellbeing hazards (16). Radiation mishaps have empowered the investigation of impacts of elevated degree of radiation, and direct no-edge (LNT) model for radiation risk evaluation has been laid out, as indicated by which radiation portion over zero postures chance partially. Albeit some consider that idea of LNT based risk assessment is off-base ascribing it to superfluous trepidation among individuals and expanded consumption on security measures, it is as yet the reason for radiation regulation(17,18).Optimization of radiation in clinical imaging is accomplished through the aggregate exertion of the alluding doctor, radiologist, radiologic technologist/radiographer, different staffs who are straightforwardly or by implication engaged with the imaging method

and the patient himself(19). Alluding doctor ought to constantly guarantee that the utilization of ionizing radiation is legitimate that is advantages of radiation ought to offset the gamble. It is likewise the obligation of radiologist and radiographers to check whether the assessment is required. Since they are officially taught, they should have exhaustive information on security measures and streamlining techniques (20, 21,22).

One of the most important organizations for ionizing radiation protection is the International Commission on Radiological Protection (ICRP). Despite the low likelihood of late effects and relatively low radiological doses, it is still advisable to keep them as low as possible (23). Radiation is dangerous, and it becomes even more dangerous when there is ignorance or professional malignancy (24, 25). The radiographer should be positioned at least 6 feet from the source and at an angle of 90° to 135° with respect to the central X-ray beam, per the position distance rule (26). Both the patient and the radiographer are exposed to radiation during radiographic investigations in medicine, so precautions must be taken to protect them both (27).

Everyday, medical services laborers (HCWs) are presented` to word related contacts with different indicative and helpful radiology intercessions [1]. The HCWs' openness to different radiology waves brings about intense confusions (dermatitis, mucositis, and going bald) as well as long haul complexities (waterfalls, skin issues, hereditary issues, and malignant growth) through weakness in the typical DNA working [2], [3], [4], [5], [6].

In particular, the HCWs presented to radiation foster disease by around over 40% contrasted with patients and different gatherings [7]. To forestall the symptoms of radiation, the Global Radiation Insurance Affiliation (IRPA) has planned a few rules to restrict the portion got by the HCWs, and it is occasionally surveyed [8], [9]. The main technique for appropriate radiation security standard execution is instruction [10]. Today, with the expansion in the quantity of radiology strategies, all medical services laborers presented to radiology waves ought to know how these methods are performed and the way that they can more readily safeguard themselves [11], [12]. The degree of consciousness of the medical services labor force about radiation security impressively affects the appropriate demeanor and execution with respect to insurance against radiology waves [13].

Man has lived with, and endured, regular radiation starting from the start of time. There are confirmations that even little dosages of radiation would be able cause the two changes and neoplasms . Nobody knows exactly how much radiation is mediocre. The Public Committee

on Radiation Security's proposals is intended to safeguard both overall population and radiation specialist. A significant number of the suggestions have been transformed into regulations. The main proposals are those including most extreme passable portions, which is presently 5rem/year for a radiation laborer and 0.5rem/year for the sometimes uncovered person Organic Impact of Radiation All ionizing radiations are destructive. This is the reason that commands a radiation wellbeing strategy. The destructive impacts fall into two expansive classes: substantial, those impacts hurtful to the individual being illuminated; and hereditary, those impacts hurtful to the group of people yet to come. There is no information accessible to show on the off chance that there is an edge beneath which no hurtful impact will happen . In real practice, radiation levels ought to be kept at lower practicable level, and we shouldn't consider passable dosages as being completely protected. The most significant substantial impact of radiation is carcinogenesis, and leukemia is the most well-known neoplasia. The specific gamble is obscure. Most specialists concur that low dosages of radiations can cause neoplasms. The hereditary impact of radiations are seriously alarming that the physical ones, since they may not show themselves for a few ages and in view of this dread portion limits are put on openness to enormous sections of populace, rather than most extreme reasonable portion greater part of past examinations have zeroed in on different subspecialties, particularly radiology. In any case, a couple of studies have been directed among sedation faculty and careful subspecialists, despite the fact that they are much of the time presented to radiation. Subsequently, the essential target of this study was to analyze information and mindfulness about radiation perils and information about radiation security among sedation suppliers and careful subspecialists. Both ionizing and nonionizing radiations are regularly utilized in day to day clinical practice. It assumes significant parts in both demonstrative and restorative modalities. Be that as it may, ionizing radiation unsafely affects interventionists and sedation faculty who are presented to radiation in their working environments.

A few examinations have exhibited that openness to clinical radiation builds the gamble of bone marrow concealment, waterfall, fruitlessness, birth disfigurements, and a few kinds of malignant growth, particularly thyroid carcinoma.¹⁻³ The edge portion differs across radiation-related illnesses. For instance, 100-200 mGy is related with teratogenic impacts and cancer,³ though 500 m Gy is related with cataracts.⁴ Thusly, mindfulness and information about radiation perils and defensive estimates assume a significant part in decreasing radiation openness among medical services laborers.

The utilization of ionizing radiation is fundamental in illness analysis and the board. As of late, the medical services setting has expanded the utilization of figured tomography and X-beam examines [1]. Consistently, over 3.6 billion X-beam tests, 37 million atomic meds, and seven and a half million radiation therapies are done all around the world [2].

Radiation represents a wellbeing risk in both the work environment and the overall climate. Radiation openness in clinical settings influences 20% of the worldwide populace, and this number will continue to rise. Specifically, contrasted with patients and different gatherings, the malignant growth rate among HCWs presented to radiation is practically 40% higher [3]. Radiation openness can cause wellbeing takes a chance with that manifest immediately or later [4].

Persistent openness can affect each framework in the body, including pre-birth deformities, malignant growth, harmless cancers, and hereditary issues. Radiation affliction (dying, weakness, loss of natural liquids, and bacterial disease) might be one of the more serious anomalies [5]. For all HCWs who are presented to radiation, wellbeing information is fundamental. Complying with wellbeing guidelines might support bringing down the recurrence of wellbeing related danger successions.

Medical services Laborers (HCWs) come into standard contact with different operations including radiation for conclusion and therapy. Around 2.3 million HCWs are working with radiation around the world. Thus, half of all medical services laborers are presented to fake and ionized radiation [6]. This exact point sets the course for the review, guaranteeing an engaged examination concerning the basic part of security consistence with regards to radiation openness in medical services settings. The World Wellbeing Association recognizes that exorbitant ionizing radiation openness raises the probability of unfavorable outcomes. Ionizing radiation's natural impacts can be sorted as deterministic or stochastic [7].

Deterministic impacts, otherwise called non-stochastic impacts or tissue responses, are the underlying changes or harm in tissues or organs brought about by high dosages of radiation. They are straightforwardly connected with the portion got and have an edge portion. Stochastic impacts, or probabilistic impacts, are related with openness to ionizing radiation and can happen at any portion, however their likelihood increments with higher dosages [5].



Aims and Objectives

AIMS & OBJECTIVES OF THE STUDY

AIMS:

1. To assess the awareness of the radiation safety and hazards among health care professionals.

OBJECTIVES:

1. To assess the level of knowledge that the healthcare professionals have about radiation safety and hazards.
2. To compare and classify workers and students are aware about the radiation's hazards.

NEED FOR THE STUDY:

1. It is necessary to train the staff and students beforehand to avoid unnecessary radiation exposure and accident.
2. There is a need for periodic training and regular monitoring of occupationally exposed health workers as well as student to ensure compliance with radiation safety regulations
3. According to IAEA (International atomic energy agency) it is essential for each nation to have radiation and nuclear safety authority in order to prevent repercussions arising from radiation safety issues from one country to other countries.



Review of literature

REVIEW OF LITERATURE

In a Review by Maajid MohiUd Noise Malik, Mohd. Arfat and Alok Kumar, Volume 13,2022The review was directed on Medicalstudents and imaging innovation understudy. Thequestionnaire was ready to assess the information and perceptionof risks and radiationprotection implied in radiological examinations.A poll surveywas applied to Clinical and imaging innovation understudies ofdifferent foundations that utilization ionizing radiation in their work, to assess their insight levelsabout ionizing radiation and their mindfulness about radiation dosages coming about because of radiologicalexaminations. 200 sixteen(216) members participated in the review, out of which 116 (76.85%)were guys and 50 (23.145 %) were females. Their degree of information about ionizing radiation hazards and assurance radiological assessments were viewed as great. The majority of the participants have great information about radiation assurance however they additionally show less information about the utilization of TLD and identical measurements during x-beam examination. The present review shows that the members have great information about radiation hazards and radiation security, wellbeing dangers, and dosages utilized for radiological applications yet radiation openness and pervasiveness of strange clinical circumstances were viewed as beneath. There is in this way, a requirement for occasional preparation and ordinary observing of occupationally uncovered health workers as well as understudies to guarantee consistence with radiation security regulations.[1]

In the concentrate by Surendra Maharjan Kalpana Parajuli Suraj Sah Upakar Poudel 2020,The principal point of this review based study was to decide the information on radiation security among staffs and understudies in radiology division of one of the clinical schools of Nepal.

Radiation insurance is the center of radiography for safe radiation-based imaging practice. This study expects to decide the information on radiation security among radiology experts and understudies in a clinical school of Nepal. A poll overview was done among 35 radiology staff and understudies at General School of Clinical Sciences (UCMS), Bhairahawa, Nepal. The poll study comprised of socio-segment factors and 17 inquiries, 3 inquiries were connected with general data in regards to preparing, information, and experience and the leftover 14 different decision questions (MCQ) were connected with radiation security. Information were dissected in SPSS Measurements programming, form 27. The p-esteem was set at 5% degree of importance. Nonparametric tests were applied since the information didn't

follow typical conveyance. The information score were sorted into lesser than 60 % insufficient, 60-80 % satisfactory and more noteworthy than or equivalent to 80 % magnificent. Out of all out 35 members, 28 were male and 7 were female with mean age 26.09 ± 7.18 years, range 18-54. The typical radiation level of mindfulness was 9.6 (68.57 %), which was satisfactory, most extreme 13 and least 4. There was not factual meaning of information score by orientation, age gatherings, work insight and studentship. Taking scholarly capability, the degree of information on confirmation graduates was insufficient 7.76 (55.42 %), and lower than other higher scholastic qualifications. Adequate radiation assurance course materials and preparing ought to be presented for recognition graduates. Proceeding with proficient training (CME) ought to be coordinated consistently. Besides, radiation security regulation is an unquestionable requirement in Nepal now.[2]

In the review finished up by Shrija Indukuri¹, Venkatachalapathy Easwaramoorthy SJIF 2019 Paramedic understudies get presented to different divisions of the medical clinic which builds the gamble of superfluous radiation openness in the event that they don't know about it. Recently delegated staff and, surprisingly, some current experienced staff might get presented to superfluous radiation in the event that not prepared. Accordingly information about this theme is fundamental. To survey the familiarity with the radiation insurance, security, and dangers among medical services laborers and paramedical understudies of different branches of an emergency clinic . To look at and assess the degree of information about the radiation insurance, security, and radiation risks among medical services laborers and paramedical understudies of different divisions of an emergency clinic . To assess if the instructional meeting on radiation assurance, security, and risks is given to the medical care laborers and paramedical understudies and how frequently it is directed .To assess assuming that the medical care laborers and the paramedical understudies can distinguish assuming there is any wellspring of radiation in their own specialty This study incorporates medical care laborers and paramedical understudies. The example size is 74 members. An internet based survey was arranged which was circulated as Google structures. The poll comprises of 4 segments, they are-1) Segment information 2) Questions connected with Radiation insurance and wellbeing. 3) Questions connected with Natural impacts of radiation 4) This segments remembers questions connected with the wellspring of radiation for their particular division and recurrence of visiting a radioactive region. Altogether, the survey comprises of 20 inquiries. Every one of the inquiries were various decision questions and contain 4 choices for each

inquiry. In general the mindfulness level was low. Compelling and continuous preparation is fundamental for all medical care laborers and paramedical understudies to work on the nature of information on radiation security, wellbeing, and dangers to stay away from superfluous openness to radiation to the specialists, understudies, and patients.[3]

In the concentrate by Hassan Hadi Al Kazzaz M.B.Ch.B, PH.D, F.I.C.M.S (F.M) Volume 08, 2021 Study of the well being and clinical innovation understudy 's information and mentalities will open the ways of settling the shortfall in their data with respect to radiation perils. The point is to survey the information on Al-Zahra college understudies toward radiation hazard. This study is a cross-sectional observational scientific investigation of how much information and height

towards radiation risks and insurance of the Wellbeing and Clinical Innovation understudies' of Al-Zahra College in Karbala, Iraq. This cross-sectional poll based study was directed on 129 out of 132 college understudies from The Wellbeing and Clinical Innovation School, whose educational plan included General Radiology, subsequent to finishing 90 days in the Branch of Radiological Methods at Al-Zahra College for Ladies. Among 132 understudies, 129 understudies partook in this Google Study hall poll, giving an in general reaction pace of (97.7%). Their general information was great and showed a higher KAP esteem comparable to dangerous insurance that (Is x beam is unsafe) with a level of (66.6%), while their insight was poor concerning the wellbeing rules. The absence of information about

ALARA or ALADA standards should be considered by refreshing first year understudy 's educational plan as well as making instructional classes to work on their knowledge.[4]

Razieh Behzadmehr , Mahboobe Doostkami , Zohreh Sarchahi , Leila Dinparast Saleh
EMAIL logo and Rezvaneh Behzadmehr

From the journal Reviews on Environmental Health

<https://doi.org/10.1515/reveh-2020-0063> In review of proof recommends various outcomes about the degree of mindfulness, disposition, and execution of medical services laborers about radiation assurance across various nations Further, many investigations have shown that HCWs with great information might miss the mark on great disposition about radiation security . Additionally, numerous singular examinations have found unfortunate information about radiation assurance . Exact assurance of mindfulness, mentality, and execution of HCWs about radiation security across various fields can help medical services policymakers in the better administration and improvement of mindfulness, demeanor change, and their

exhibition. As far as we could possibly know, up to this point, no review has been acted in such manner and with this degree. Likewise, this efficient audit study was led to decide the information, disposition, and practice (KAP) of medical care laborers towards radiation assurance.[5]

Volume-7 | Issue-5 | May-2018 | PRINT ISSN No 2277 - 8179 INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH All ionizing radiations are destructive. This is the reason that commands a radiation security strategy. All people are presented to radiations in low portions. Of concern is the gamble associated with this low portion radiation, particularly the acceptance of malignant growth or hereditary deformities. Three boundaries are accessible to diminish radiation openness: time, distance and boundaries. Time assumes its part in three ways: in how much time that the machine is turned on at a specific current communicated as Mama and is called the responsibility; in how much time that the pillar is aimed at a specific region, called the utilization factor; and in how much time that an region is involved, called the inhabitance factor. Distance weakens the pillar by the recognizable converse square regulation. Boundaries are generally developed of either sheet lead or cement. Obstructions can be essential what's more, auxiliary relying upon whether they shield from essential radiation (the helpful shaft) or stray radiation (a blend of spillage what's more, disperse radiations). When in doubt no auxiliary obstruction is expected for regions safeguarded by an essential hindrance, for example an essential serves both an essential and optional hindrance.[6]

2020 Jan 22. doi: 10.1177/2050312120901733 Chaowanan Khamtuikrua and Sirilak Suksompong

The principal segment expected members to give the accompanying segment data: age, orientation, word related position (staff, occupant, individual, or medical caretaker), work insight (years), division, level of all out working hours which the respondent was presented to radiation across the beyond a year, and earlier cooperation in a radiation risks and security class.

The subsequent segment, which comprised of inquiries on mindfulness about radiation dangers and security rehearses, evaluated mindfulness about radiation perils and the routine utilization of individual assurance, to be specific, a lead cover, eye goggles, and a thyroid safeguard, while working in a climate that involves radiation openness.

The third segment, which evaluated information about radiation dangers and assurance, zeroed in on the accompanying:

The guideline of radiation insurance (ALARA)

Greatest passable portion of radiation each year for laborers overall and pregnant ladies in specific

Essential wellsprings of radiation openness in mediation rooms

Organs that are defenseless to radiation-related diseases

Lead covers and the standard thickness of lead in a lead apron

Lead goggles

The reverse connection between the distance between oneself and radiation machine and radiation dose

Data about dosimeters

The radiation portion of fluoroscopes that are utilized in clinical procedures.[7]

Methodology

MATERIALS AND METHOD

7.1 SOURCE OF DATA: SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTER VIJAYAPUR.

7.2 TYPE OF STUDY: Cross sectional study

7.3 STUDY PERIOD: One Year

INCLUSION CRITERIA:

- Employees working experience in for at least 3months.
- The study included healthcare workers and students from various departments like Radiology, Urology, Neurosurgery, Pulmonary Department and Orthopaedic Department.
- All individuals who are willing to participate .

EXCLUSION CRITERIA:

- Other non-surgical departments .

7.4METHODS OF DATA COLLECTION:

All the healthcare professional (Doctors, Nurses, Students) will be selected through Stratified Random Sampling method on duty staff will be included in the study. Radiation safety and hazard exposed by the healthcare professional will be assessed through semi structured questionnaires the factors responsible for the radiation hazards will be thoroughly addressed according to compliance and standards of IAEA (International atomic energy agency) and taking necessary measures like capacity building and creating awareness training etc.

7.5 SAMPLE SIZE:

SAMPLE SIZE:

As per the study done by MaajidmohiUd Din Mailk, The proportion of proportion of good knowledge of radiation hazards is 87% Considering the confidence limit of these studies to be 96% with 4% level of significance and margin of error 0.05. The sample size computed using the following formula

$$\text{Sample size (n)} = (Z^2 * p * (1-p)) / d^2$$

Where,

Z is the z score= 2.0537

d is the margin of error= 0.05

n is the population size

p is the population proportion =0.458

a is the level of significance=0.04

The estimated sample size of this study is **420**.

7.6 STATISTICAL ANALYSIS:

The data obtained is entered in a Microsoft Excel sheet, and statistical analyses are performed using a statistical package for the social sciences (SPSS) (Version 20). Results are presented as Mean, SD, counts and percentages, and diagrams. For normally distributed continuous variables between the two groups will be compared using an independent sample test. For not normally distributed variables, the Mann-Whitney U test is used. For Categorical variables between the two groups, are compared using the Chi-square test/Fisher's exact test. If there are more than two groups we will use ANOVA, For not normally distributed, Kruskal-Wallis H Test. If $p < 0.05$ will be considered statistically significant. All statistics are performed two-tailed.



Results

RESULTS:

TABLE 1: Distribution of study participants according to Department

TABLE 1: Radiology has the largest group of participants, with 159 individuals, making up 37.9% of the total. Orthopedic is the second largest group, with 56 participants, which is 13.4% of the total. Medico has 42 participants, accounting for 10.0%. Urology and Neurosurgery have 33 (7.9%) and 32 (7.6%) participants, respectively. UG Perfusion Technology has 30 participants, representing 7.1% of the total. Cardiology has 28 participants, which is 6.7%. Pulmonary Department includes 24 participants, making up 5.7%. CATH LAB Technician has 10 participants, or 2.4%. CCT has the smallest group with 6 participants, accounting for 1.4%. The total number of participants across all departments is 420, making up 100% of the data.

Departments	No. of participants	percentage
Cardiology	28	6.7
CATH LAB Technician	10	2.4
CCT	6	1.4
medico	42	10.0
Neurosurgery	32	7.6
Orthopedic	56	13.4
Pulmonary Department	24	5.7
Radiology	159	37.9
UG Perfusion Technology	30	7.1
Urology	33	7.9
Total	420	100.0

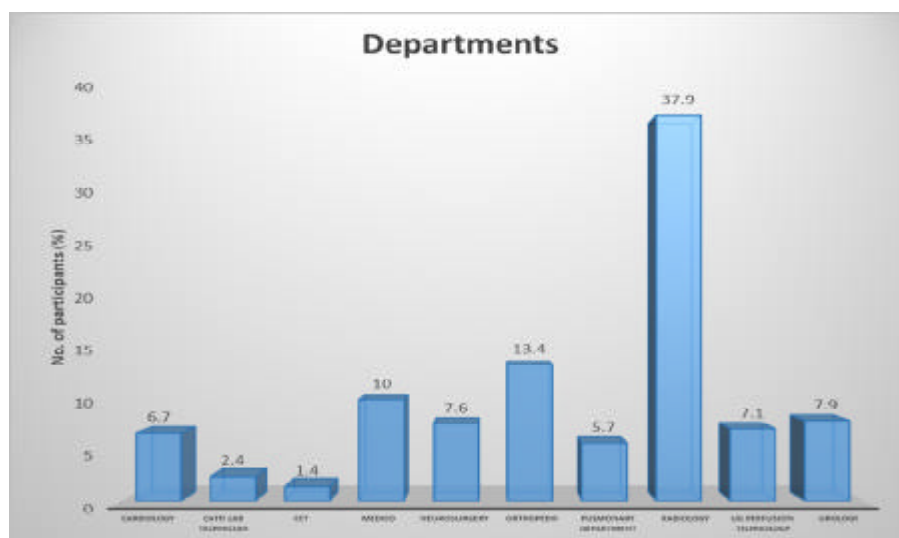


TABLE 2:

Distribution of study participants according to Age

In the study, there were a total of 420 participants. Among them, 4 participants (1.0%) were under 20 years old. The largest age group was 20 to 24 years, comprising 242 participants (57.6%). Participants aged 25 to 29 years made up 97 individuals (23.1%). There were 64 participants (15.2%) in the 30 to 34 years age group. Lastly, 13 participants (3.1%) were aged 35 and above.

Age(Years)	No. of participants	percentage
< 20	4	1.0
20 - 24	242	57.6
25 - 29	97	23.1
30 - 34	64	15.2
35+	13	3.1
Total	420	100.0

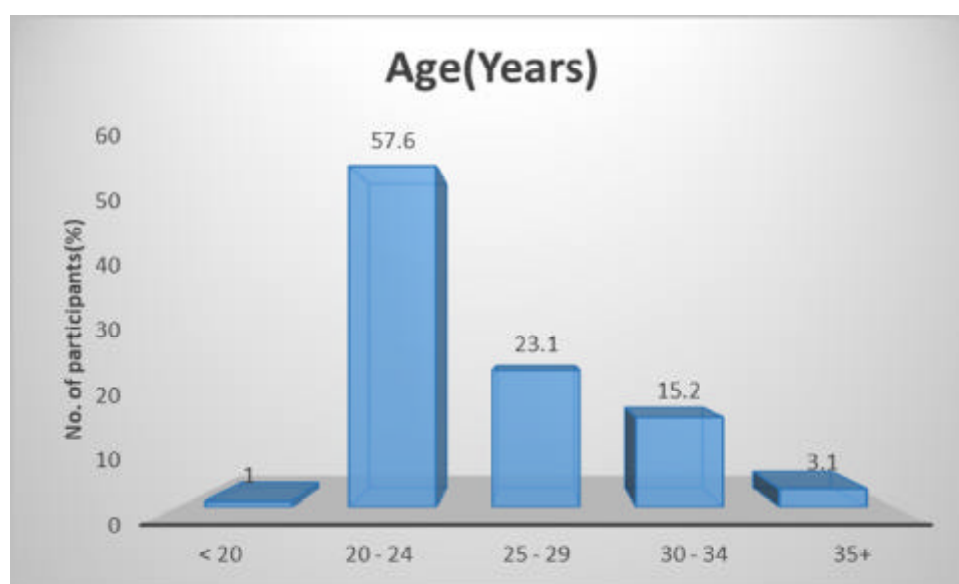


TABLE 3:

Distribution of study participants according to Designation

In the study, there were a total of 420 participants. Among them, 14 participants (3.3%) were CT & MRI radiographers. Interns made up 17 participants (4.0%). Junior Residents accounted for 82 participants (19.5%). The largest group was Medicos, with 98 participants (23.3%). Senior Residents comprised 69 participants (16.5%). Students were the most numerous, with 119 participants (28.4%). Lastly, there were 21 participants (5.0%) who were Technicians.

		Frequency	Percent
Valid	CT & MRI radiographer	14	3.3
	Interns	17	4.0
	Junior Resident	82	19.5
	Medico	98	23.3
	Senior Resident	69	16.5
	Student	119	28.4
	Technician	21	5.0
	Total	420	100.0

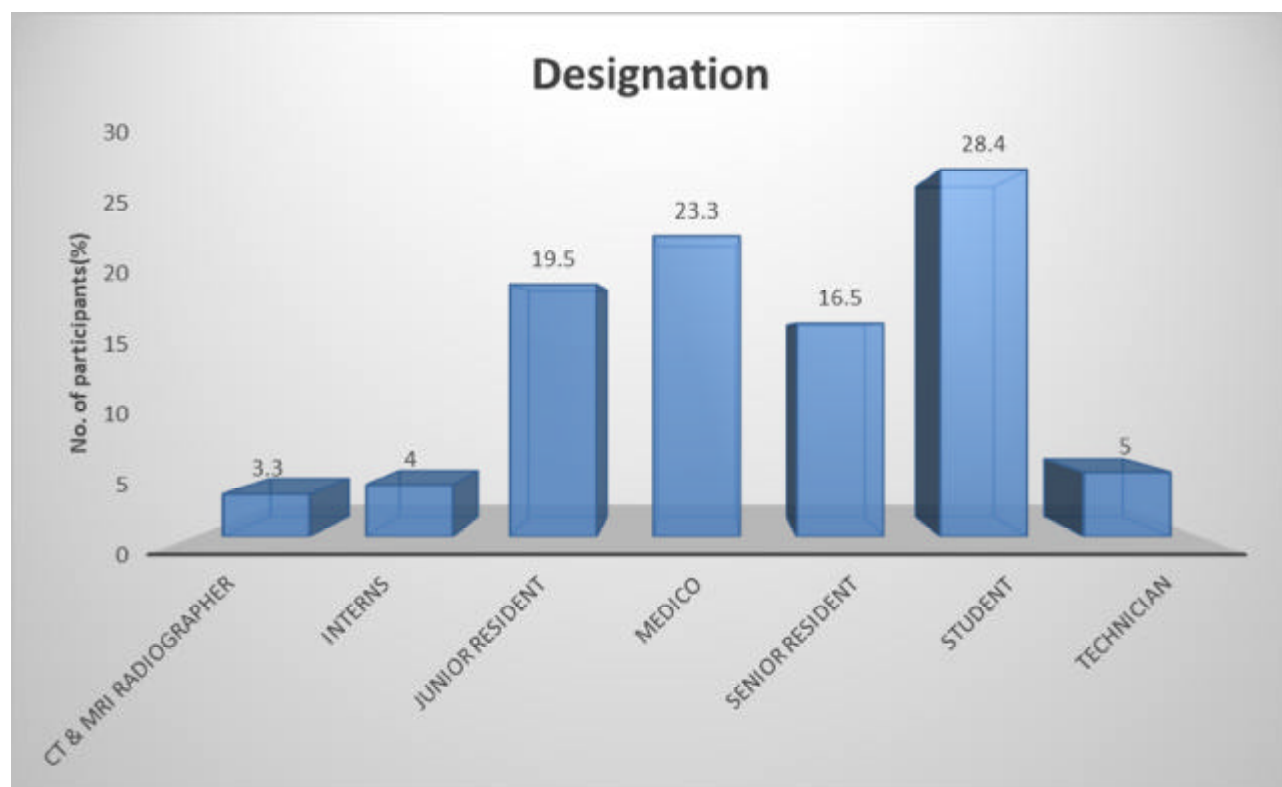


TABLE 4:

Distribution of study participants according Gender

In the study, there were a total of 420 participants. Among them, 168 participants (40.0%) were female, while 252 participants (60.0%) were male.

Gender	No. of participants	percentage
Female	168	40.0
Male	252	60.0
Total	420	100.0

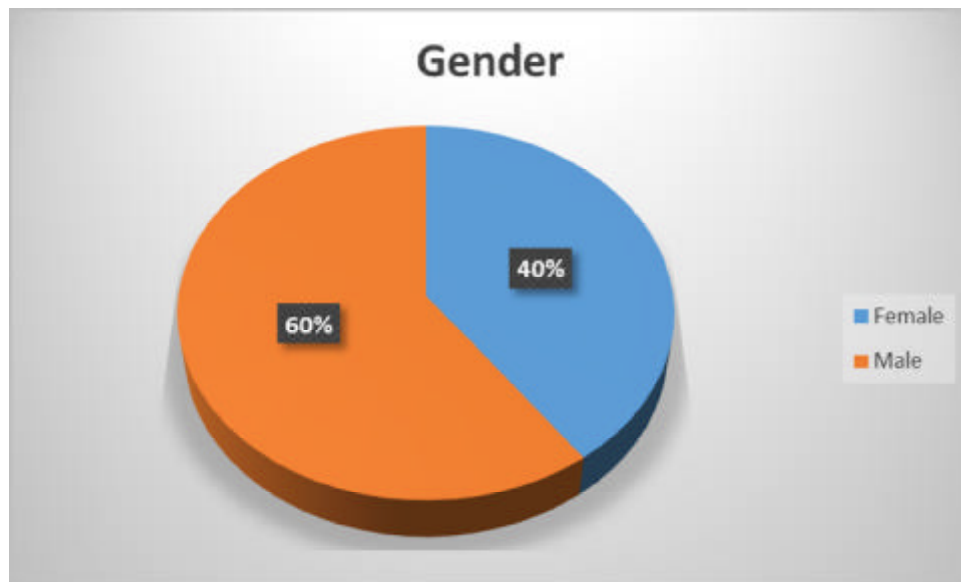


TABLE 5:

In the study, there were a total of 420 participants. Among them, 1 participant (0.2%) responded “No,” while 419 participants (99.8%) responded “Yes.” This means that 99.8% of the participants gave a valid response of “Yes,” and cumulatively, 100% of the participants’ responses were accounted for.

Are you aware of radiations safety and hazards?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	1	0.2	0.2	0.2
	Yes	419	99.8	99.8	100.0
	Total	420	100.0	100.0	



TABLE 6:

Out of a total of 420 responses, 88 respondents (21.0%) answered “Maybe,” 58 respondents (13.8%) answered “No,” and 274 respondents (65.2%) answered “Yes.” The cumulative percentages for “Maybe,” “No,” and “Yes” are 21.0%, 34.8%, and 100.0%, respectively.

Do you know the three principles of radiation protection?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	88	21.0	21.0	21.0
	No	58	13.8	13.8	34.8
	Yes	274	65.2	65.2	100.0
	Total	420	100.0	100.0	

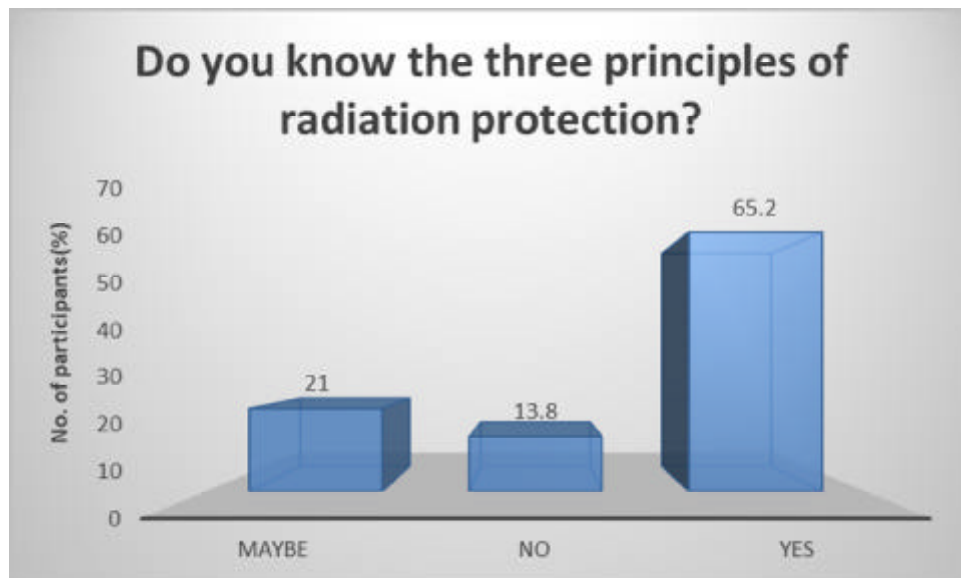


TABLE 7:

Out of a total of 420 responses, 110 respondents (26.2%) answered “Maybe,” 95 respondents (22.6%) answered “No,” and 215 respondents (51.2%) answered “Yes.” The cumulative percentages for “Maybe,” “No,” and “Yes” are 26.2%, 48.8%, and 100.0%, respectively.

Do you always wear a radiation dosimeter?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	110	26.2	26.2	26.2
	No	95	22.6	22.6	48.8
	Yes	215	51.2	51.2	100.0
	Total	420	100.0	100.0	

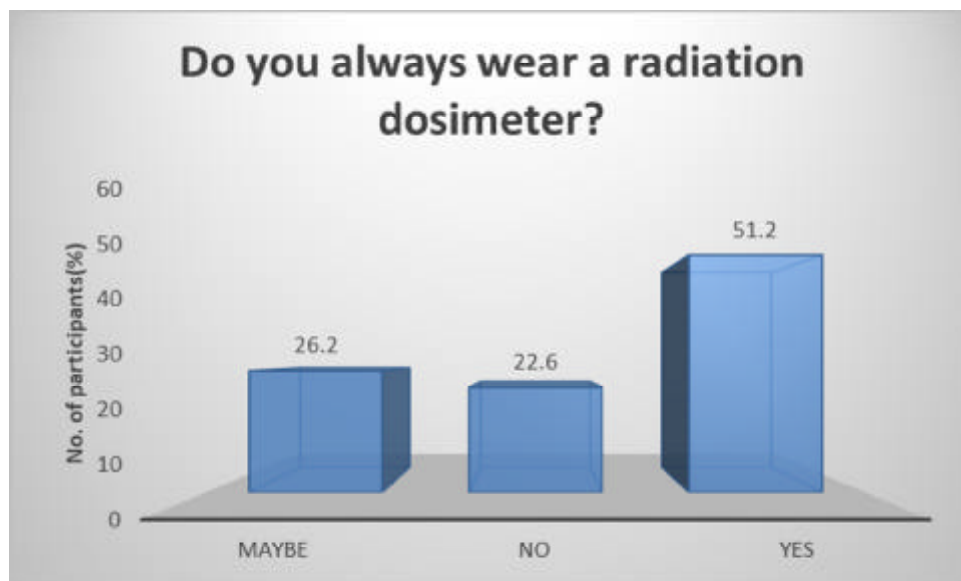


TABLE 8:

Out of a total of 420 responses, 6 respondents (1.4%) answered “maybe,” 9 respondents (2.1%) answered “No,” and 405 respondents (96.4%) answered “Yes.” The cumulative percentages for “maybe,” “No,” and “Yes” are 1.4%, 3.6%, and 100.0%, respectively.

Do you wear lead apron when you work with radiation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	maybe	6	1.4	1.4	1.4
	No	9	2.1	2.1	3.6
	Yes	405	96.4	96.4	100.0
	Total	420	100.0	100.0	

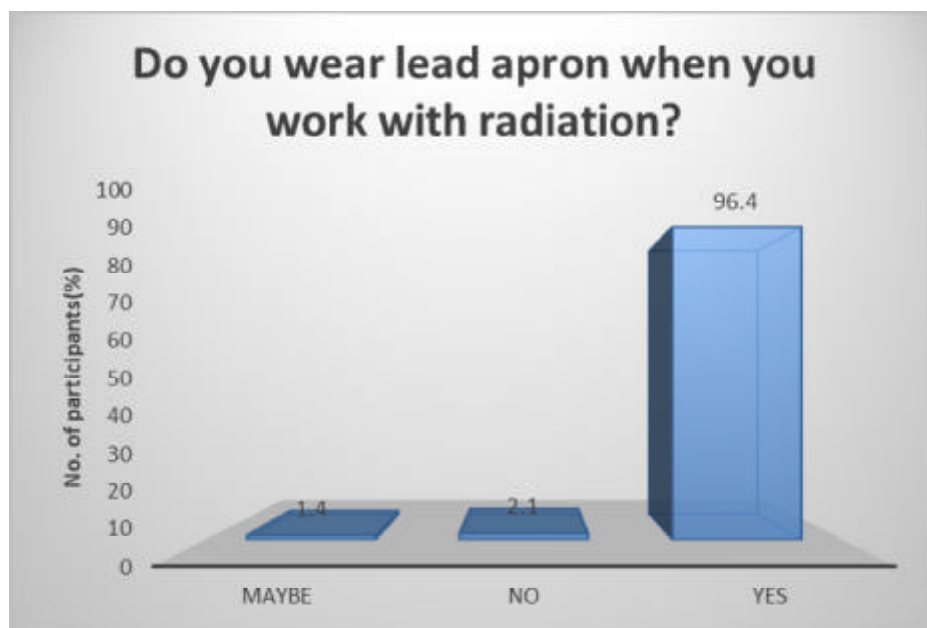


TABLE 9:

Out of a total of 420 responses, 31 respondents (7.4%) answer “Maybe,” 50 respondents (11.9%) answered “No,” and 339 respondents (80.7%) answered “Yes.” The cumulative percentages for “Maybe,” “No,” and “Yes” are 7.4%, 19.3%, and 100.0%, respectively.

Do you wear lead goggle when you work with radiation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	31	7.4	7.4	7.4
	No	50	11.9	11.9	19.3
	Yes	339	80.7	80.7	100.0
	Total	420	100.0	100.0	

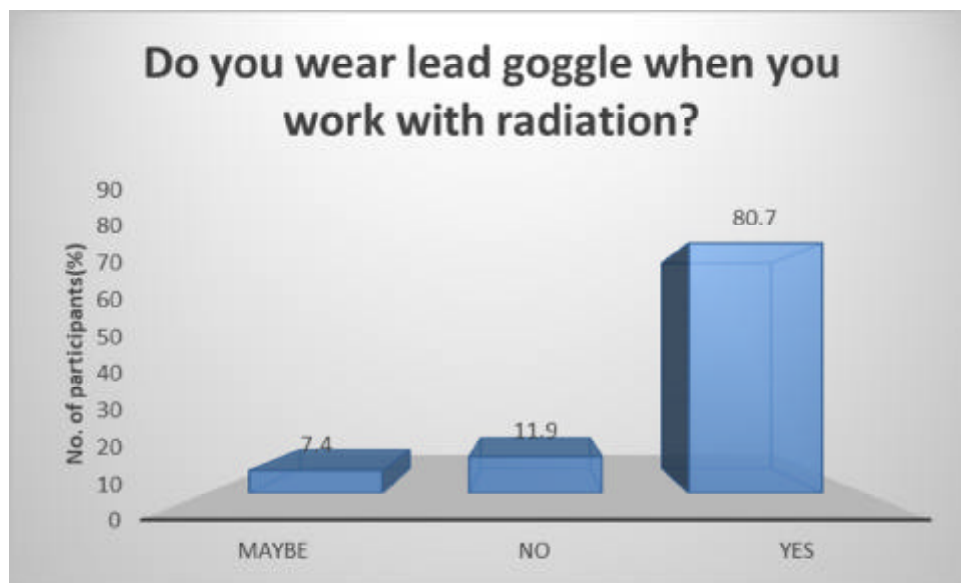


Table 10:

Out of a total of 420 responses, 109 (26.0%) were marked as “Maybe,” 92 (21.9%) as “No,” and 219 (52.1%) as “Yes.” The cumulative percentages for “Maybe,” “No,” and “Yes” responses were 26.0%, 47.9%, and 100.0%, respectively.

Have you ever worn thyroid shield when you work with radiation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	109	26.0	26.0	26.0
	No	92	21.9	21.9	47.9
	Yes	219	52.1	52.1	100.0
	Total	420	100.0	100.0	

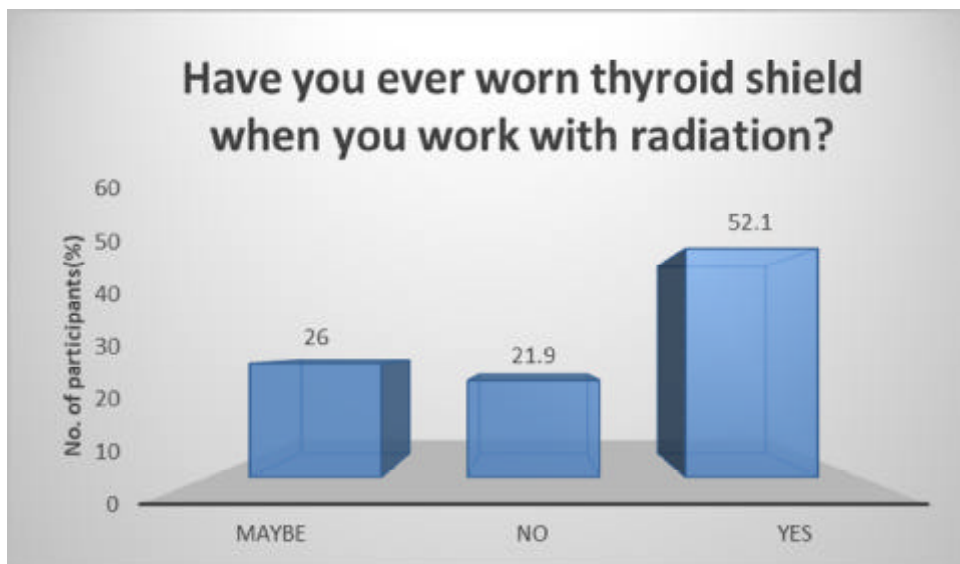


Table 11:

Out of a total of 420 responses, 86 (20.5%) were marked as “Maybe,” 28 (6.7%) as “No,” and 306 (72.9%) as “Yes.” The cumulative percentages for “Maybe,” “No,” and “Yes” responses were 20.5%, 27.1%, and 100.0%, respectively.

Do you feel all the different types of radiation are harmful to your body?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	86	20.5	20.5	20.5
	No	28	6.7	6.7	27.1
	Yes	306	72.9	72.9	100.0
	Total	420	100.0	100.0	

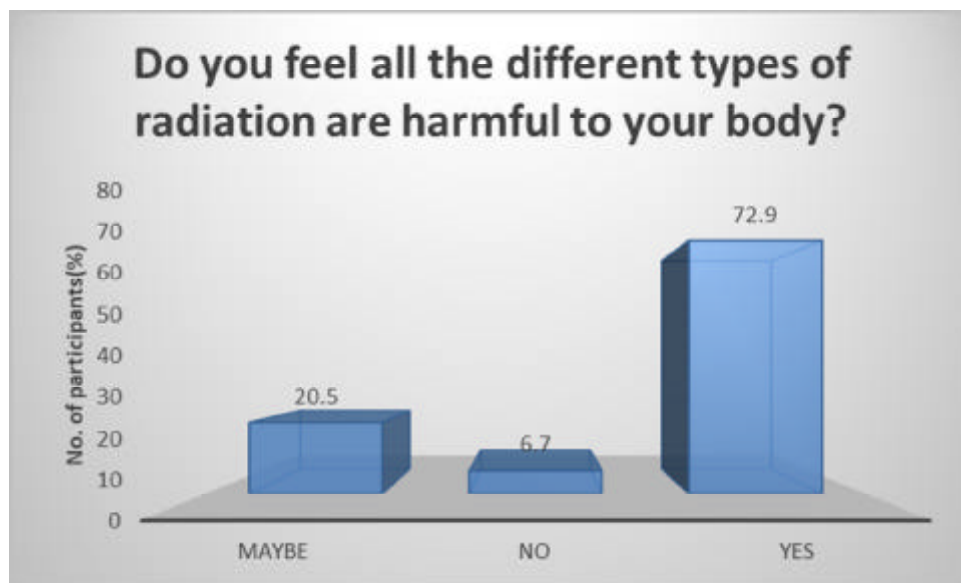


Table 12:

Out of a total of 420 responses, 69 (16.4%) were marked as “Maybe,” 122 (29.0%) as “No,” and 229 (54.5%) as “Yes.” The cumulative percentages for “Maybe,” “No,” and “Yes” responses were 16.4%, 45.5%, and 100.0%, respectively.

Are you aware of ICRP/NCRP/AERB?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	69	16.4	16.4	16.4
	No	122	29.0	29.0	45.5
	Yes	229	54.5	54.5	100.0
	Total	420	100.0	100.0	

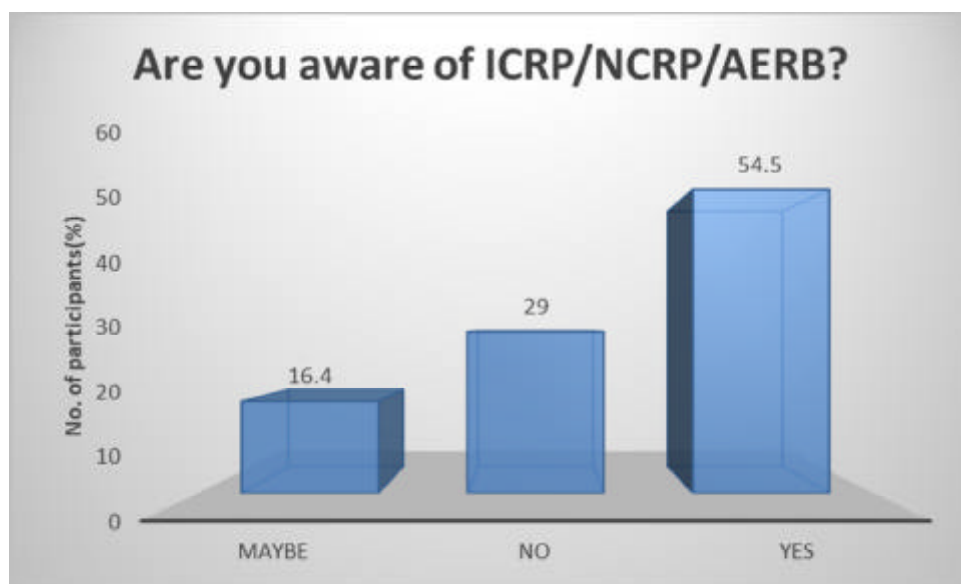


Table 13:

Out of a total of 420 responses, 1 respondent (0.2%) answered “Maybe,” 230 respondents (54.8%) answered “No,” and 189 respondents (45.0%) answered “Yes.” The cumulative percentages for “Maybe,” “No,” and “Yes” are 0.2%, 55.0%, and 100.0%, respectively.

Did you know the purpose of collimators/filters in radiography?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	1	.2	.2	.2
	No	230	54.8	54.8	55.0
	Yes	189	45.0	45.0	100.0
	Total	420	100.0	100.0	

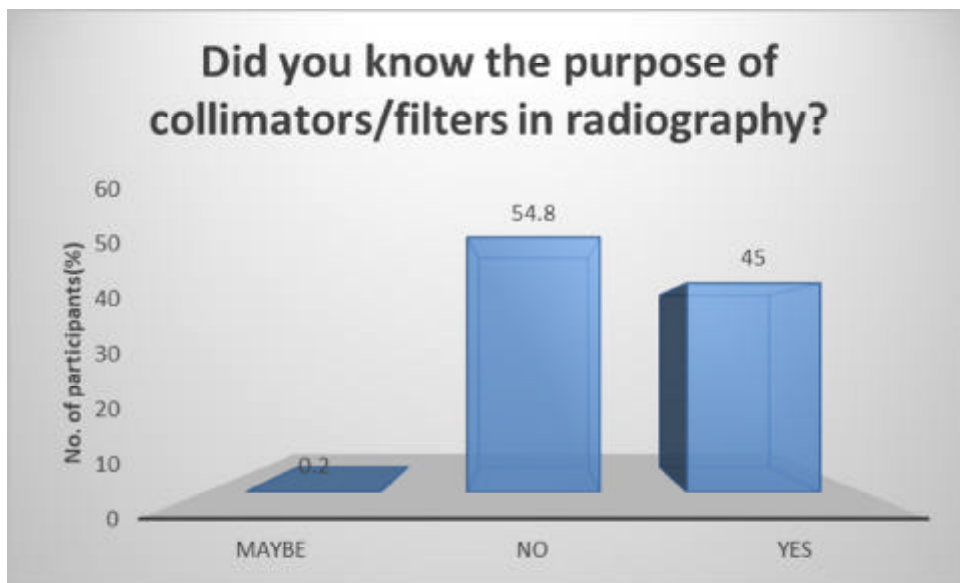


Table 14:

Out of a total of 420 respondents, 68.1% indicated that they are aware of the ALARA principle, while 30.0% stated that they are not aware. Additionally, 1.9% of the respondents were unsure about their awareness of the principle. This means that cumulatively, 31.9% of the respondents either do not know or are unsure about the ALARA principle

Are you aware of the ALARA principle?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	8	1.9	1.9	1.9
	No	126	30.0	30.0	31.9
	Yes	286	68.1	68.1	100.0
	Total	420	100.0	100.0	

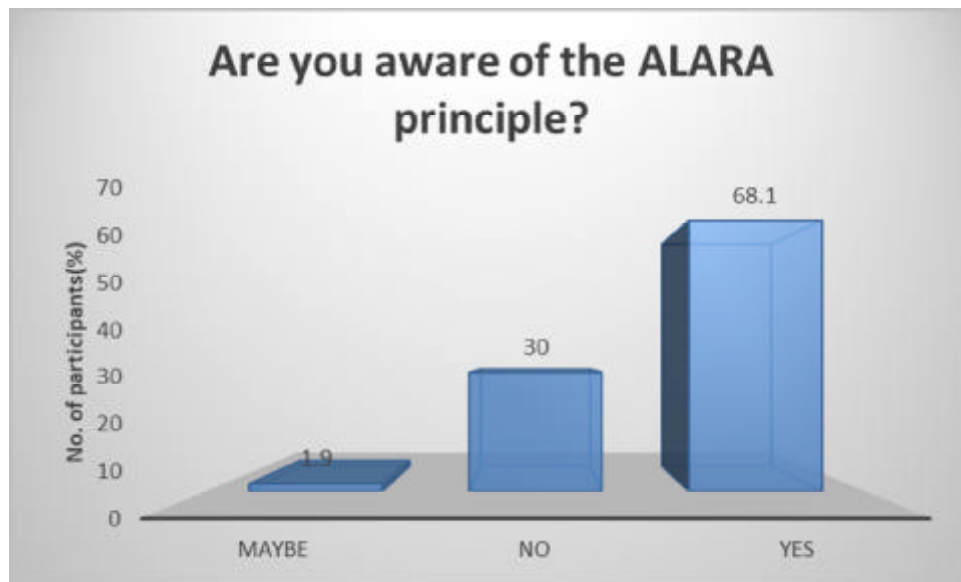


Table 15:

Out of a total of 420 respondents, 40 people (9.5%) answered “Maybe” when asked about the TLD. A smaller group of 27 respondents (6.4%) said “No,” while the majority, 353 respondents (84.0%), answered “Yes.” This brings the cumulative total to 100%.

Did you know about the TLD?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	40	9.5	9.5	9.5
	No	27	6.4	6.4	16.0
	Yes	353	84.0	84.0	100.0
	Total	420	100.0	100.0	

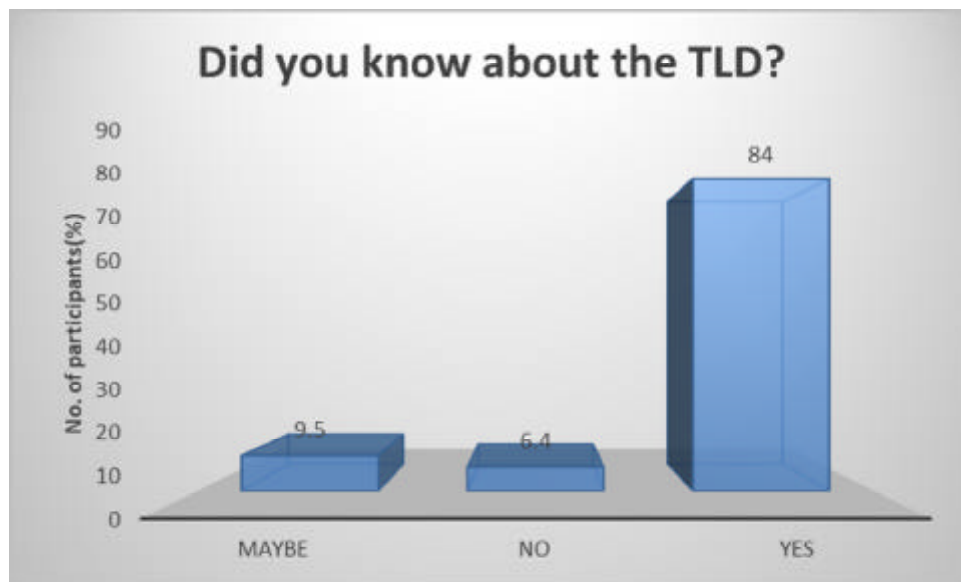


Table 16 :

Out of a total of 420 respondents, 56 people (13.3%) answered “Maybe” when asked about the TLD. A smaller group of 38 respondents (9.0%) said “No,” while the majority, 326 respondents (77.6%), answered “Yes.” This brings the cumulative total to 100%.

Did you know how to use TLD badge?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	56	13.3	13.3	13.3
	No	38	9.0	9.0	22.4
	Yes	326	77.6	77.6	100.0
	Total	420	100.0	100.0	

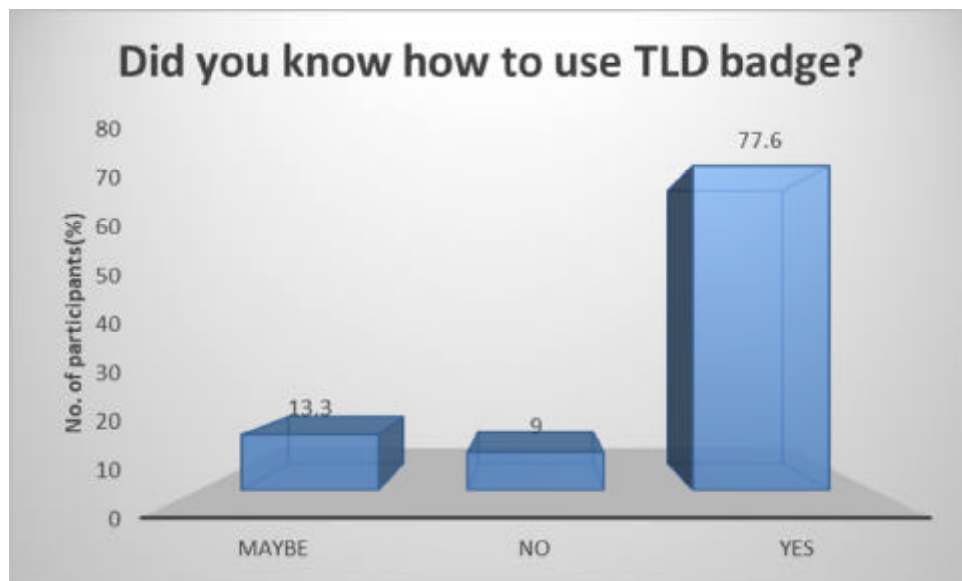


Table 17:

Out of a total of 420 respondents, 210 people (50.0%) answered “Maybe” when asked if X-ray equipment should be carried out periodically. An equal number of 210 respondents (50.0%) said “Yes.” This brings the cumulative total to 100%.

Do X-ray equipment should be carried out periodically?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	210	50.0	50.0	50.0
	Yes	210	50.0	50.0	100.0
	Total	420	100.0	100.0	

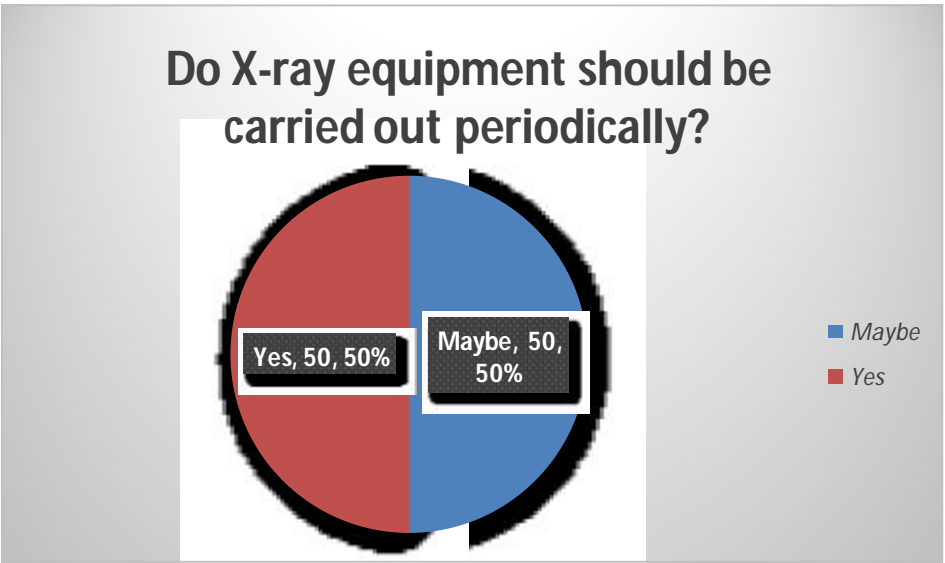


Table 18:

Out of a total of 420 respondents, 54 people (12.9%) answered “Maybe” when asked if they know the thickness of the mobile protective barrier used in the X-ray room. A larger group of 143 respondents (34.0%) said “No,” while the majority, 223 respondents (53.1%), answered “Yes.” This brings the cumulative total to 100%

Do you know the thickness of the mobile protective barrier used in the X-ray room?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	54	12.9	12.9	12.9
	No	143	34.0	34.0	46.9
	Yes	223	53.1	29.5	100.0
	Total	420	100.0	100.0	

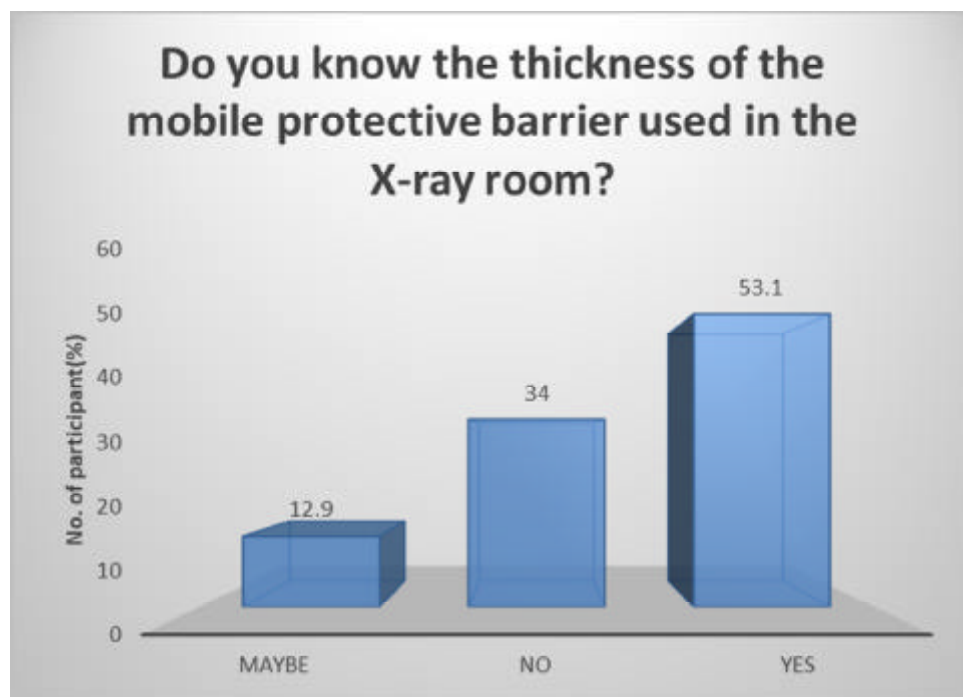


Table 19:

Based on the data provided, it appears that the majority of respondents believe that radiation-causing equipment is maintained and serviced periodically. Specifically, 85.7% (360 out of 420) of respondents answered “Yes,” indicating regular maintenance and servicing. Meanwhile, 14.3% (60 out of 420) of respondents were unsure, answering “Maybe.” This suggests a high level of confidence in the periodic maintenance and servicing of such equipment among the respondents.

Do all the radiation causing equipment are maintained and serviced periodically?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	60	14.3	14.3	14.3
	Yes	360	85.7	85.7	100.0
	Total	420	100.0	100.0	

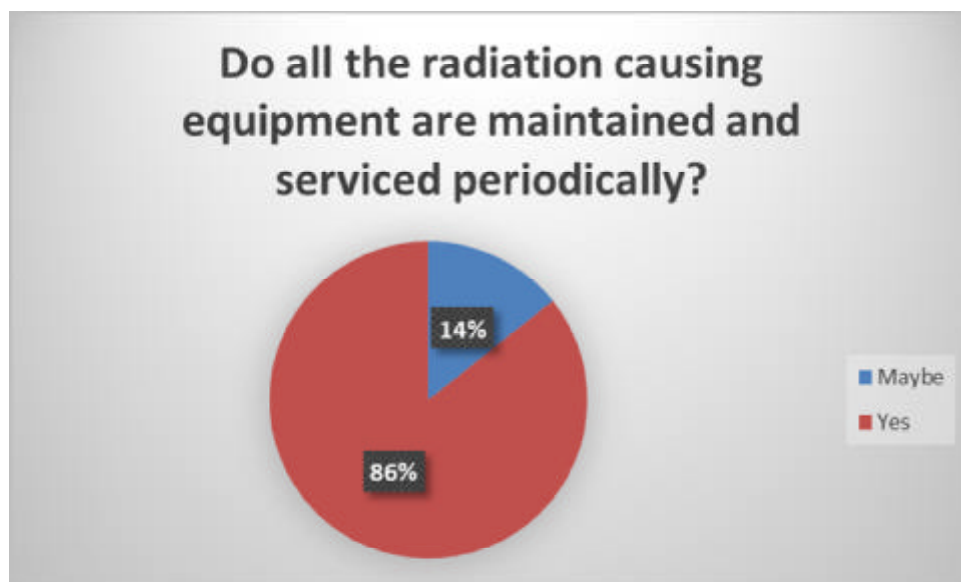


Table 20:

According to the data provided, a significant portion of respondents are aware of natural radiation exposure. Specifically, 68.1% (286 out of 420) of respondents answered “Yes,” indicating they know about natural radiation exposure. Meanwhile, 17.9% (75 out of 420) of respondents answered “No,” and 14.0% (59 out of 420) were unsure, answering “Maybe.” This suggests that while a majority are informed about natural radiation exposure, there is still a notable percentage who are either unaware or uncertain.

Do you know how much naturally we are exposed to the radiation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	59	14.0	14.0	14.0
	No	75	17.9	17.9	31.9
	Yes	286	68.1	68.1	100.0
	Total	420	100.0	100.0	

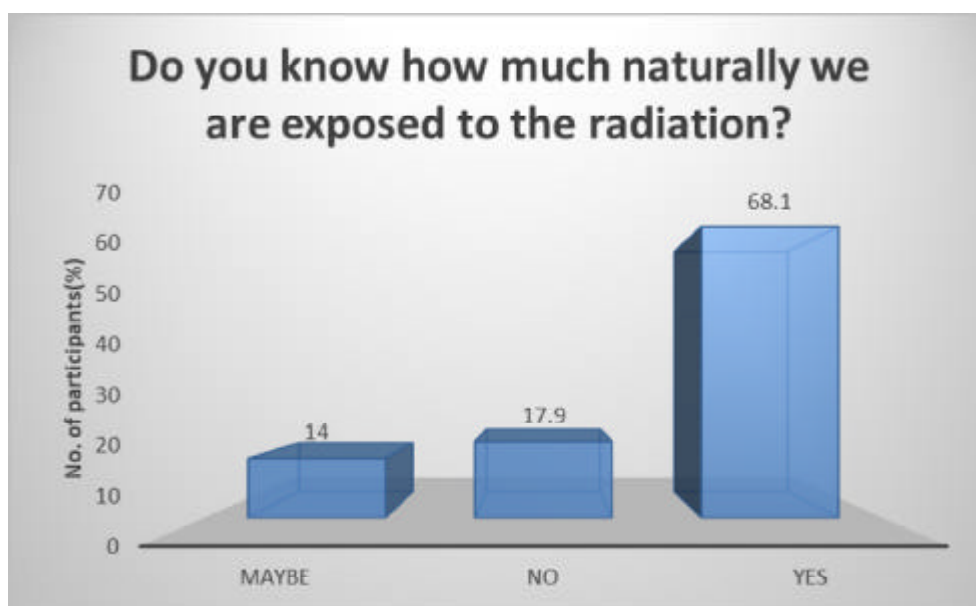


Table 21:

Based on the data provided, it appears that a majority of respondents are aware of the permissible levels of radiation exposure. Specifically, 53.8% (226 out of 420) of respondents answered “Yes,” indicating they know how much radiation is permissible. Meanwhile, 23.6% (99 out of 420) of respondents were unsure, answering “Maybe,” and 22.6% (95 out of 420) answered “No,” indicating they do not know the permissible levels. This suggests that while over half of the respondents are informed, there is still a significant portion who are either unaware or uncertain about permissible radiation exposure levels.

Do you know how much radiation is permeable to be get exposed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	99	23.6	23.6	23.6
	No	95	22.6	22.6	46.2
	Yes	226	53.8	53.8	100.0
	Total	420	100.0	100.0	

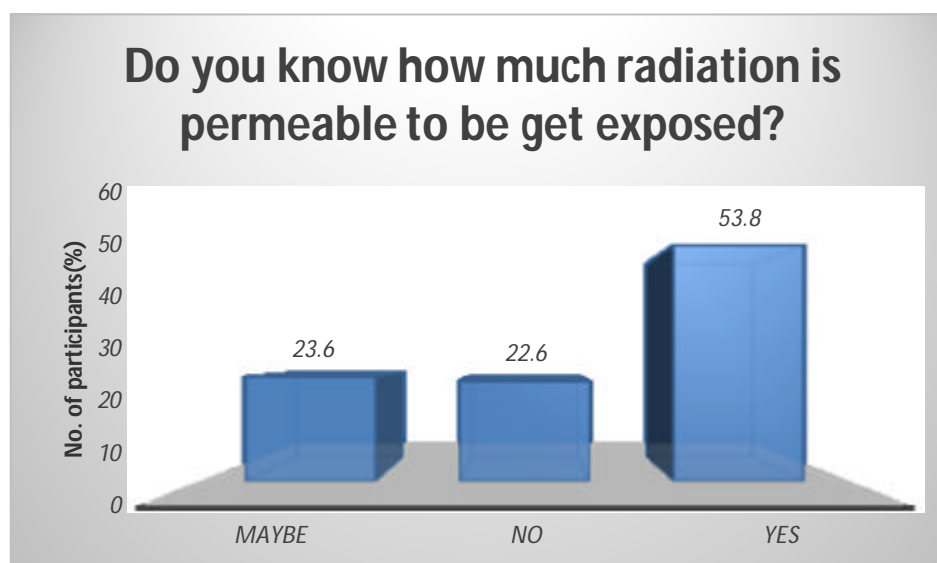


Table 22:

According to the data provided, a significant majority of respondents are aware of the types of radiation used in a CATH LAB. Specifically, 87.6% (368 out of 420) of respondents answered “Yes,” indicating they know the types of radiation used. Meanwhile, 6.2% (26 out of 420) of respondents were unsure, answering “Maybe,” and another 6.2% (26 out of 420) answered “No,” indicating they do not know. This suggests that most respondents are well-informed about the radiation types used in CATH LABs.

Do you know what types of radiation are used in CATH LAB?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	26	6.2	6.2	6.2
	No	26	6.2	6.2	12.4
	Yes	368	87.6	87.6	100.0
	Total	420	100.0	100.0	

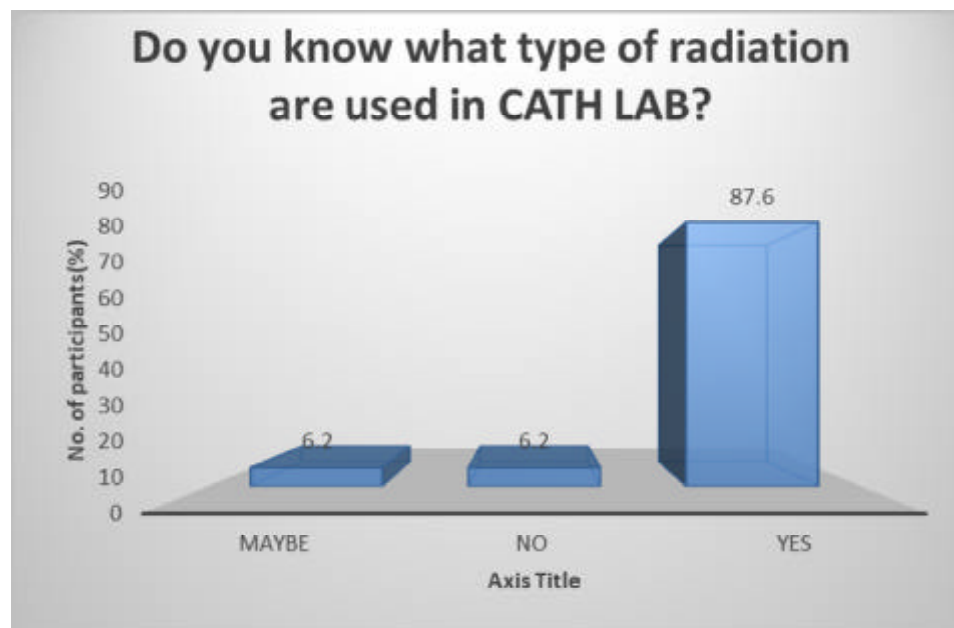


Table 23:

Based on the data provided, it appears that regular training on radiation hazards is given to healthcare professionals. Out of a total of 420 respondents, 418 (or 99.5%) confirmed that they receive such training. Only 2 respondents (0.5%) were uncertain, indicating a high level of compliance and awareness regarding radiation safety among healthcare professionals.

Do regular training is given to all the healthcare professionals about radiation hazard?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	2	.5	.5	.5
	Yes	418	99.5	99.5	100.0
	Total	420	100.0	100.0	

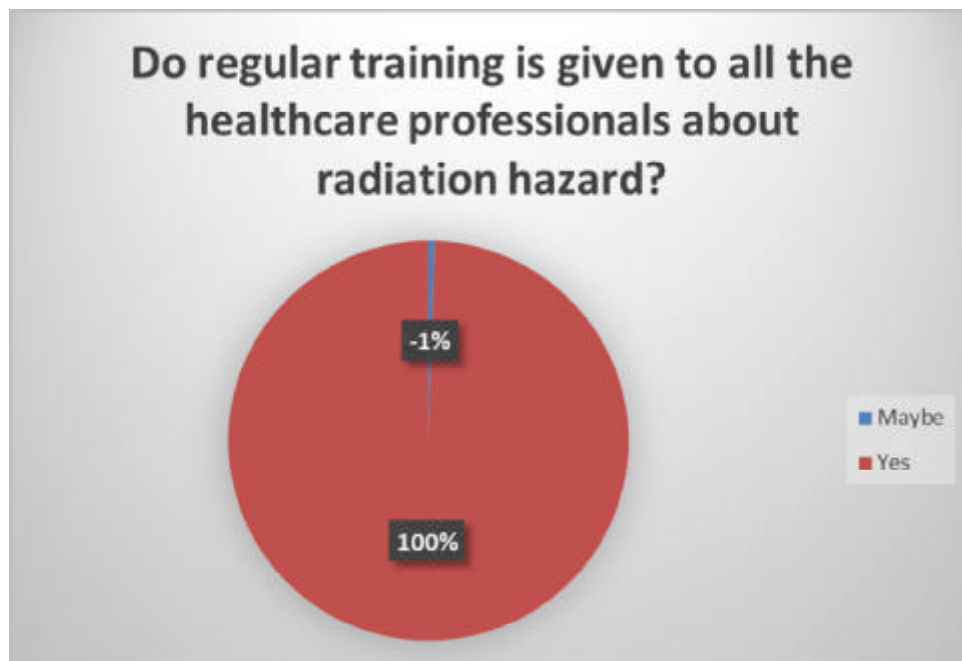


Table 24:

According to the data, all 420 respondents (100%) indicated that they would adhere to radiation protection protocols in their future clinical practice. This unanimous response highlights a strong commitment to maintaining safety standards among healthcare professionals.

Will you adhere to radiation protection protocols at the time of your future clinical practice?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	420	100.0	100.0	100.0



Table 25:

The overall results of the knowledge assessment for 420 respondents show that the total score for correct answers ranged from 13 to 20, with a mean score of 16.79 and a standard deviation of 1.782. For incorrect answers, the scores ranged from 0 to 7, with a mean score of 3.21 and the same standard deviation of 1.782. The Mann-Whitney U test yielded a value of 1206.000 with a significance value (P) of 0.148, indicating no statistically significant difference in the distribution of scores

Overall Result of knowledge

Overall Total score of knowledge	N	Minimum	Maximum	Mean	Std. Deviation	Mann Whitney U test	Significant value
CORRECTANSWERS	420	13	20	16.79	1.782	U=1206.000	P=0.148
WRONGANSWERS	420	0	7	3.21	1.782		

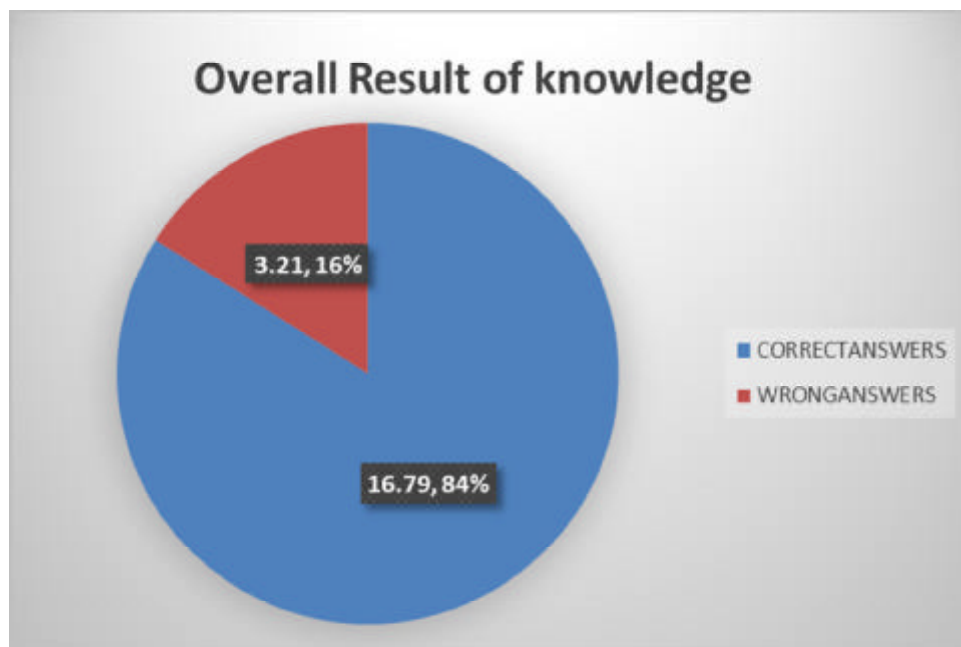
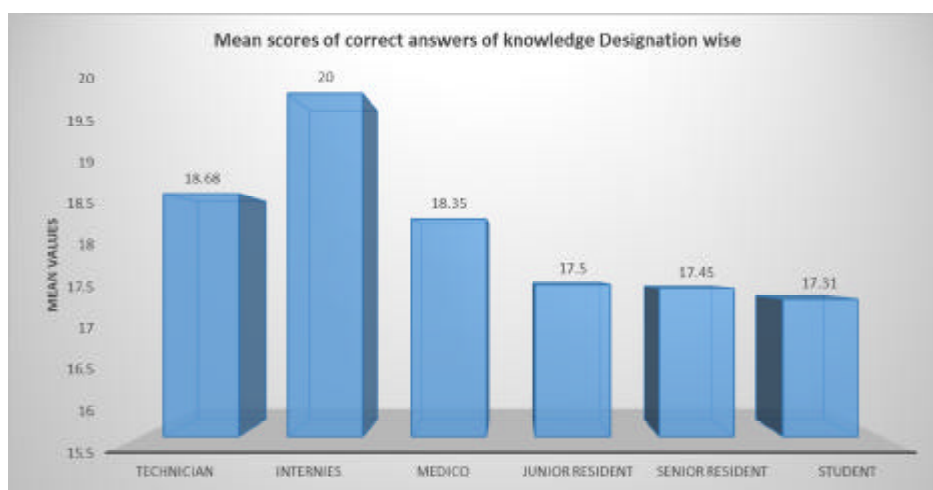


Table 26:

The comparison of overall knowledge scores across different designations reveals some interesting insights. Among the 107 respondents, interns scored the highest with a perfect mean score of 20.00 and no variation (standard deviation of 0.000). Technicians followed with a mean score of 18.68 and a standard deviation of 1.520. Medicos had a mean score of 18.35 with a standard deviation of 1.648. Junior residents and senior residents had mean scores of 17.50 and 17.45, respectively, with standard deviations of 0.926 and 2.115. Students scored the lowest with a mean score of 17.31 and a standard deviation of 1.123. The overall mean score for all respondents was 18.19 with a standard deviation of 1.620. The Kruskal-Wallis test yielded a significant value ($P=0.0001^*$), indicating a statistically significant difference in knowledge scores across the different designations. Comparison of overall knowledge score and Designation

Designation	Descriptive statistics of overall knowledge score (Correct answers)				Kruskal-Wallis Test	Significant value
	N	Mean	Std. Deviation	Std. Error		
Technician	25	18.68	1.520	0.304	30.183	$P=0.0001^*$
intern	11	20.00	.000	0.000		
Medico	26	18.35	1.648	0.323		
junior resident	8	17.50	0.926	0.327		
Senior resident	11	17.45	2.115	0.638		
student	26	17.31	1.123	0.220		
Total	107	18.19	1.620	0.157		

***:Statistically significant**

**Table 27:**

The comparison of overall knowledge scores across different age groups reveals some interesting insights. For the age group 20-24, with a sample size of 76, the mean score was 18.51 with a standard deviation of 1.596 and a standard error of 0.183. The age group 25-29, consisting of 15 individuals, had a mean score of 17.47, a standard deviation of 0.990, and a standard error of 0.256. Meanwhile, the 30-34 age group, with 16 participants, showed a mean score of 17.31, a standard deviation of 1.740, and a standard error of 0.435. Overall, the total sample of 107 participants had a mean score of 18.19, a standard deviation of 1.620, and a standard error of 0.157. The Kruskal-Wallis Test indicated a significant difference in knowledge scores across these age groups, with a p-value of 0.015

Comparison of overall knowledge score on Age

AGE	Descriptive statistics of overall knowledge score (Correct answers)				Kruskal-Wallis Test	Significant value
	N	Mean	Std. Deviation	Std. Error		
20 - 24	76	18.51	1.596	0.183	5.868	P=0.015*
25 - 29	15	17.47	0.990	0.256		
30 - 34	16	17.31	1.740	0.435		
Total	107	18.19	1.620	0.157		
*:Statistically significant						

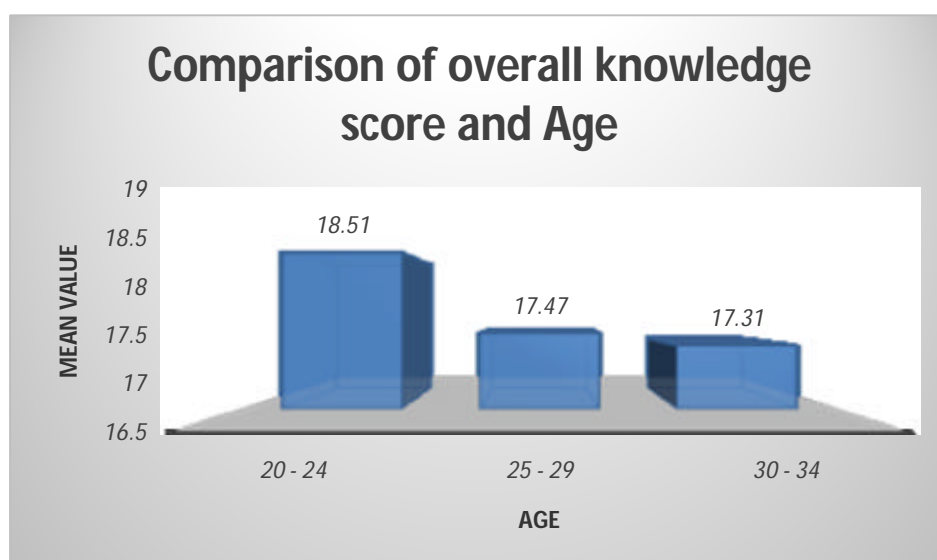
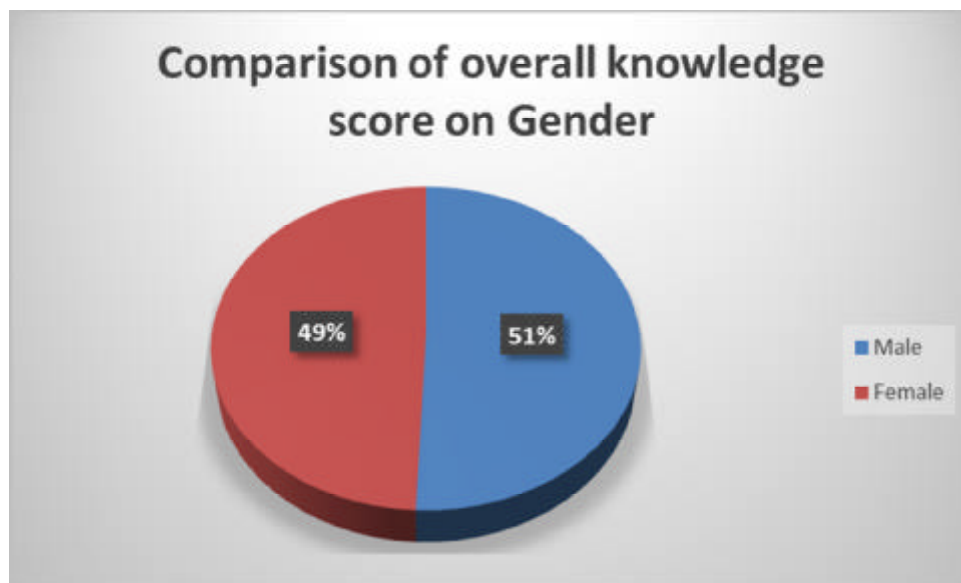


Table 28:

The comparison of overall knowledge scores based on gender shows that males, with a sample size of 54, had a mean score of 18.43, a standard deviation of 1.382, and a standard error of 0.188. On the other hand, females, with a sample size of 53, had a mean score of 17.94, a standard deviation of 1.813, and a standard error of 0.249. The Mann-Whitney Test indicated no significant difference in knowledge scores between males and females, with a p-value of 0.148.

Comparison of overall knowledge score on Gender

CORRECT ANSWERS	Gender	Frequency	Mean	Std. Deviation	Std. Error Mean	Mann-Whitney Test	Significant value
	Male	54	18.43	1.382	0.188	1206.000	P=0.148*
	Female	53	17.94	1.813	0.249		





Discussion

DISCUSSION

The fundamental points and objective of this review to assess the information and mindfulness level of the radiological experts, who are working and concentrating on in the radiation zone straightforwardly or by implication. Progression of the innovation in the clinical science, increment the utilization of assortment of modalities in the medication for the analytic as well as helpful reason. Ionizing radiation might make unsafe impact the human populace, on the off chance that they took care of inappropriately; in any case, there is no hurtful impact of radiation. Hence, this is vital to be familiar with the fundamentals of radiation including physical science of radiation, uses of radiation in medication, and mindfulness about wellbeing perils. There is different wellspring of radiation, regular as well as fake (man-made). Greatest level of radiation got from normal source, just of radiation got from the counterfeit source. In this review, just members knew about the wellspring of radiation. This isn't great portrayal of information, on the grounds that as radiology proficient we need to be aware of fundamentals of radiation like source, hurtful impact, and kinds of radiation security guideline and so on absence of this essential information may prompts undesirable radiation portion to the patients as well as him/her moreover. By and large fulfillment level of the experts in the radiology division yielded disheartening, Some idea additionally comes from the member's side including radiation portion and hardware's connected inquiry. We can additionally work on the mindfulness and showing system in the radiology field. It ought to be more hypothetical as well as down to earth situated to upgrade the ability and information the radiology experts. This is vital to radiology understudies as well as personnel to examine about the essentials of radiations, for example, wellspring of radiation, radiation insurance rule, natural impact of radiation and so on in subtleties, it improves the information on radiology understudies as well as radiology experts too. It is disturbing that, the information about rudiments

The assessment of radiation wellbeing information and mindfulness among radiology experts including radiology laborers and radiology understudies was finished effectively. The review uncovered connections between their capability levels, with radiation security mindfulness. It likewise found connections between nuts and bolts of radiation to fulfillment level in the radiology field. Lower level of information was related with consciousness of radiation

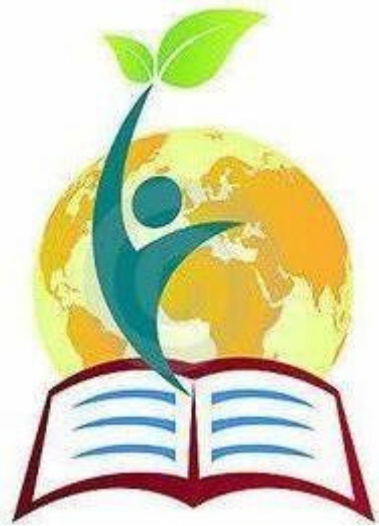
insurance measures. At last we need to concentrate the more exploration based study including hypothetical too viable too The assessment of radiation safety and hazard awareness among healthcare professionals, based on a sample of 420 participants, revealed that the correct answers ranged from 13 to 20, with a mean score of 16.79 and a standard deviation of 1.782. The Mann-Whitney U test indicated no significant difference, with a p-value of 0.148. Additionally, the wrong answers ranged from 0 to 7, with a mean score of 3.21 and a standard deviation of 1.782. This suggests a moderate level of knowledge among healthcare professionals regarding radiation safety and hazards, with no significant variation in scores.



Conclusion

CONCLUSION

Conclusion: The assessment of radiation wellbeing information and mindfulness among radiology experts including radiology laborers and radiology understudies was finished effectively. The review uncovered connections between their capability levels, with radiation security mindfulness. It likewise found connections between nuts and bolts of radiation to fulfillment level in the radiology field. Lower level of information was related with consciousness of radiation insurance measures. At last we need to concentrate the more exploration based study including hypothetical too viable too The assessment of radiation safety and hazard awareness among healthcare professionals, based on a sample of 420 participants, revealed that the correct answers ranged from 13 to 20, with a mean score of 16.79 and a standard deviation of 1.782. The Mann-Whitney U test indicated no significant difference, with a p-value of 0.148. Additionally, the wrong answers ranged from 0 to 7, with a mean score of 3.21 and a standard deviation of 1.782. This suggests a moderate level of knowledge among healthcare professionals regarding radiation safety and hazards, with no significant variation in scores.



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Annexure

ANNEXURE – I

INSTITUTIONAL ETHICAL CERTIFICATE



BLDE
(DEEMED TO BE UNIVERSITY)
Declared as Deemed to be University u/s 3 of UGC Act, 1956.
Accredited with 'A' Grade by NAAC (Cycle-2)
The Constituent College
SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE, VIJAYAPURA
BLDE (DU)/IEC/ 1037/2023-24 26/6/2023

INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE


The Ethical Committee of this University met on Friday, 23rd June, 2023 at 11.30 a.m. in the CAL Laboratory, Dept. of Pharmacology, scrutinized the Synopsis/ Research Projects of Post Graduates Students / Under Graduate Students /Faculty Members of this University /Ph.D. Students College from Ethical Clearance point of view. After scrutiny, the following original/ corrected and revised version synopsis of the thesis/ research projects has been accorded Ethical Clearance.

TITLE: "To assess the awareness of the radiation safety and hazards among healthcare professionals".

NAME OF THE PRINCIPAL INVESTIGATOR: Ms.Kajal Kamaraj Chavan, MHA.
(Reg.No. 22MHA03)

NAME OF THE GUIDE: Dr. Vijayakumar T.Kalyanappagol, Medical Director of Super Specialty.

Dr. Santoshkumar Jeevangi
Chairperson
IEC, BLDE (DU),
VIJAYAPURA
Chairman,
Institutional Ethical Committee,
BLDE (Deemed to be University)
Vijayapura



Dr.Akram A. Naikwadi
Member Secretary
IEC, BLDE (DU),
VIJAYAPURA
MEMBER SECRETARY
Institutional Ethics Committee
BLDE (Deemed to be University)
Vijayapura-586103, Karnataka

Following documents were placed before Ethical Committee for Scrutinization.

- Copy of Synopsis/Research Projects
- Copy of inform consent form
- Any other relevant document

Smt. Bangaramma Sajjan Campus, B. M. Patil Road (Sholapur Road), Vijayapura - 586103, Karnataka, India.
BLDE (DU): Phone: +918352-262770, Fax: +918352-263303, Website: www.bldeu.ac.in, E-mail: office@bldeu.ac.in
College: Phone: +918352-262770, Fax: +918352-263019, E-mail: bmprsc.principal@bldeu.ac.in

ANNEXURE – II

SCHEME OF CASE TAKING:

NAME:	AGE:
GENDER:	DEPARTMENT:
QUALIFICATION:	DURATION OF WORK:
DESIGNATION:	

Sl, No.	QUESTIONS	YES	NO	DONT KNOW
1	Are you aware of radiations safety and hazards?			
2	Do you know the three principles of radiation protection?			
3	Do you always wear a radiation dosimeter?			
4	Do you wear lead apron when you work with radiation?			
5	Do you wear lead goggle when you work with radiation?			
6	Have you ever worn thyroid shield when you work with radiation?			
7	Do you feel all the different types of radiation are harmful to your body?			
8	Are you aware of ICRP/NCRP/AERB?			
9	Did you know the purpose of collimators/filters in radiography?			
10	Are you aware of the ALARA principle?			

Sl, No.	QUESTIONS	YES	NO	DONT KNOW
11	Did you know about the TLD?			
12	Did you know how to use TLD badge?			
13	Do X-ray equipment should be carried out periodically?			
14	Do you known the thickness of the mobile protective barrier used in the X-ray room?			
15	Do all the radiation causing equipment are maintained and serviced periodically?			
16	Do you know how much naturally we are exposed to the radiation?			
17	Do you know how much radiation is permeable to be get exposed ?			
18	Do you know what type of radiation are used in Cath Lab?			
19	Do regular training is given to all the healthcare professionals about the radiation hazard?			
20	Will you adhere to radiation protection protocols at the time of your future clinical practice?			

ANNEXURE – III
(A) INFORMED CONSENT FORM

BLDE (DEEMED TO BE UNIVERSITY)

SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTER
VIJAYAPURA

RESEARCH INFORMED CONSENT FORM

Title: To Assess the awareness of the radiation safety and hazards among health care
professionals.

Participant's name:

Address:

The details of the study have been provided to me in writing and explained to me in my own language. I confirm that I have understood the above study and had the opportunity to ask questions. I understand that my participation in the study is voluntary and that I am free to withdraw at any time, without giving any reason, without the medical care that will normally be provided by the hospital being affected. I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purposes). I have been given an information sheet giving details of the study. I fully consent to participate in the above study.

Signature of the participant:
Date:

Signature of the witness:
Date:

Name of the witness:
Address of the witness:

Signature of the investigator:

[illegible]

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
Pulmonar	Junior																										
70	resident	21	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
71	resident	26	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
72	resident	28	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
73	resident	28	Female	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
74	resident	25	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
75	resident	28	Female	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
76	resident	26	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
77	resident	21	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
78	resident	25	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
79	resident	29	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
80	resident	24	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
81	resident	32	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
82	resident	34	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
83	resident	32	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
84	resident	31	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
85	resident	32	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
86	resident	35	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
87	resident	33	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
88	resident	29	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
89	resident	34	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
90	resident	33	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										
118	resident	32	Male	Yes		1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes
Pulmonar	Junior																										

[illegible]

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
286	Orthopedic	Junior resident	30 Female	Yes	No	0	Months	1 Yes	Yes	Hi	Hi	Yes	Yes	Yes	Yes	Yes	Yes	No	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
287	Orthopedic	Junior Resident	30 Female	Yes	No	0	Months	1 Yes	Yes	Hi	Hi	Yes	Yes	Yes	Yes	Yes	Yes	No	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
288	Podiatry	Medic	32 Female	Yes	No	0	Months	1 Yes	Yes	Medio	Medio	Hi	Hi	Yes	Yes	Yes	Yes	No	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
289	Podiatry	Medic	32 Female	Yes	No	0	Months	1 Yes	Yes	Medio	Medio	Hi	Hi	Yes	Yes	Yes	Yes	No	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
290	Podiatry	Medic	32 Female	Yes	No	0	Months	1 Yes	Yes	Medio	Medio	Hi	Hi	Yes	Yes	Yes	Yes	No	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
291	Orthopedic	Junior resident	30 Female	Yes	No	0	Months	1 Yes	Yes	Hi	Hi	Yes	Yes	Yes	Yes	Yes	Yes	No	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
292	Orthopedic	Junior resident	31 Female	Yes	No	0	Months	1 Yes	Yes	Hi	Hi	Yes	Yes	Yes	Yes	Yes	Yes	No	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
293	Podiatry	student	32 Female	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
294	Podiatry	student	32 Female	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
295	Podiatry	student	32 Female	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
296	Podiatry	student	32 Female	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
297	Podiatry	student	31 Female	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
298	Podiatry	student	31 Female	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
299	Podiatry	student	32 Male	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
300	Podiatry	student	31 Female	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
301	Podiatry	student	31 Male	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
302	Podiatry	student	32 Male	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
303	Podiatry	student	32 Male	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
304	Podiatry	student	32 Male	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
305	Podiatry	student	31 Male	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
306	Podiatry	student	32 Male	Yes	Yes	1 Yes	1 Yes	1 Yes	Yes	Medio	Medio	Yes	Yes	Yes	Yes	Yes	Yes	Hi	Major	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
30	Orthopedic	Service Patient	32 Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	Orthopedic	Service Patient	34 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	Orthopedic	Service Patient	34 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	Orthopedic	Service Patient	31 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	Orthopedic	Service Patient	33 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	Orthopedic	Service Patient	31 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	Orthopedic	Service Patient	34 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	Neurology	Service Patient	29 Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	Neurology	Service Patient	27 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	Neurology	Service Patient	22 Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	Neurology	Service Patient	23 Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	Neurology	Service Patient	21 Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
42	Neurology	Service Patient	23 Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	Neurology	Service Patient	21 Female	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	Neurology	Service Patient	27 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	Neurology	Service Patient	29 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	OT	Service	21 Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

