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TO EXAMINE AND ASSES THE KNOWHOW AND ATTENTIVENESSAROUND RADIATION SAFETYAMONGSTSURGEONS THROUGHOUT FLUOROSCOPY UNIT IS USED

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Abstract

The use of fluoroscopic imaging is increasing in the modern orthopedic theatre. Benefits of intra-operative fluoroscopy include the indirect visualization of anatomy, enabling many orthopedic procedures to be performed with greater ease, in less time and with less traumatization of patient tissues, thus reducing patient morbidity. Need for fluoroscopy was indeed very high in the orthopedic theatre. Placement of internal and external fixation devices, as well as long bone fracture reductions, are amongst the orthopedic procedures frequently performed under fluoroscopic guidance. Fluoroscopic use in the theatre setting is how ever not without risk to the orthopedic surgeon, the biological effects of ionizing radiation being well-known. These effects include dose-dependent deterministic effects and dose-independent stochiastic effects. Deterministic effects are unlikely to occur below a specific dose threshold and include cataracts, alopecia, headache, dermal ulceration and infertility. Stochastic effects do not have a threshold dose and may include the induction of malignancy in radio sensitive organs such as the breasts, lungs, thyroid and red bone marrow.

INTRODUCTION

Radiation safety is a concern for patients, physicians, and staff in many departments, including radiology, interventional cardiology, and surgery. Radiation emitted during fluoroscopic procedures is responsible for the greates tradiation dose for medical staff.

Radiation from diagnostic imaging modalities, such as computed to mography, mammography,andnuclearimaging,areminorcontributorstothecumulativedoseexposuresof health care personnel. However, any radiation exposure poses a potential risk to both patients and healthcare workers alike.[1] Radiation protection aims to reduce unnecessary radiation exposure with a goal to minimize the harmful effects of ionizing radiation.[2]In the medical field, ionizing radiation has become an inescapable tool used for the diagnosis and treatment of a variety of medical conditions. As its use has evolved, so have the cumulative doses of lifetime radiation that both patients and medical providers receive. Most radiation exposure in medical settings arises from fluoroscopic imaging, whichusesx-raystoobtaindynamicandcinematicfunctionalimaging.Formal radiation protection training helps reduce radiation exposure to medical staff and patients.[3]However, enforcing radiation safety guidelines can be an arduous process, and many interventional is ts do not receive formal training in either residency or fellowship on radiation dose reduction. In particular, cliniciansormedicalstaffthatusefluoroscopicimaging outside of dedicated radiology or interventional department shavelowadherenceto radiation safety guidelines. Fluoroscopy is used in many specialties, including orthopedics, urology, interventional radiology, interventional cardiology, vascular surgery, and gastroenterology. As radiation exposure becomes more prevalent, a thorough understanding of radiation exposure risks and do seduction techniques will be of utmost importance. There are three basic principles of radiation protection: justification, optimization, and do selimitation. Justificationinvolvesanappreciationforthebenefitsandrisksofusingradiationforproceduresortreatments.Physicians, surgeons, and radiologic personnel all play a key role in educating patients on the potential adverse effects of radiation exposure. The benefits of exposure should be well known and accepted by the medical community. Often, procedures that expose patients to relatively higher doses of radiation—for example, interventional vascular procedures—are medically necessary, and thus the benefits outweigh the risks. The As Low as Reasonably Achievable (ALARA) principle, defined by the code of federal regulations, was created to ensure that all measures to reduce radiation exposure have been taken while acknowledging that radiation is an integral part of diagnosing and treating patients. Any amount of radiation exposure will increase the risk of stochastic effects, namely the chances of developing malignancy following radiation exposure. These effects are thought to occur a saline armodel

in which there is no specific threshold to predict whether or not

Need of study

In many orthopedic operating rooms, orthopaedic surgeons routinely wear lead aprons for protection from radiation, but some studies have questioned whether this is needed. We conducted a systematic review to identify studies that measured the amount of radiation that orthopaedic surgeons were exposed to in the orthopedic operating room. Multiple studies have shown that at 1.5 m from the source of radiation, orthopaedic surgeons received no radiation, or amounts so small that a person would have to be present in an unreasonable number of operations to receive cumulative doses of any significance. Radiation dose sat this distance were often at the limits of the sensitivity of the measuring dosimeter.

We question the need to wear lead protection for orthopaedic surgeons and anesthesia providers who are routine lyat 1.5 m or a greater distance from standard fluoroscopy units.

Aim and Objectives

- To assess the level of Knowledge and Awareness of Radiation protection among orthopedics during fluoroscopy
- To assess the associated risk so fradiation among orthopedics.

RESEARCH METHODOLOGY

- Research approach : Quantitative approach
- Research design : Crosssectional study
- Research setting : Kashmir
- Population : Orthopaedic surgeons working in different hospital in Kashmir
- Sample size : 100
- Sampling technique : Convenience Sampling Technique
- Statistical method : Descriptive statistical method

Sampling criteria

- Inclusion criteria : Orthopaedic surgeons working in different hospital in Kashmir
- Exclusion criteria : Orthopaedic surgeons, who were not willing to participate

Method

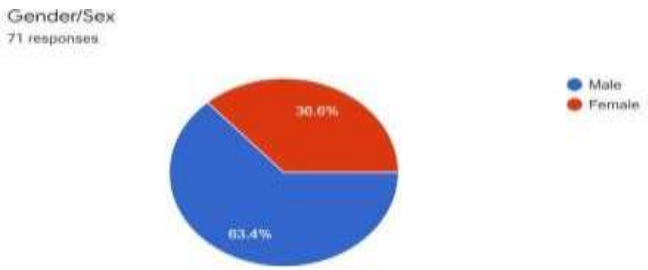
The Questionnaire based survey entitled "DESCRIPTIVE STUDY TOASSES THE KNOWLEDGE AND AWARENESS OF RADIATION PROTECTION AMONG ORTHOPAEDIC SURGEONS" was conducted among orthopaedic surgeons working in different hospitals in Kashmir. The study was carried out in different hospitals in Kashmir. The questionnaire was self-structured, examined and approved by the ETHICAL committee JAMIA HAMDARD. The questionnaire related to the KNOWLEDGE AND AWARENESS OF RADIATION PROTECTION AMONG ORTHOPAEDIC SURGEONS. Was in the form of Multiple –choice questions, questionnaire was given to each participant. The questions of the questionnaire are divided into three sections.

1. The first section consists of questions related to respondent age, sex, qualification and. No personal identifying data was collected.
2. The second section consisted of 18 multiple choice questions about radiation hazards and its safety.

The participants were informed that their participation in this study will be entirely on a voluntary basis and will be confidential before responding to the questionnaires.

Results

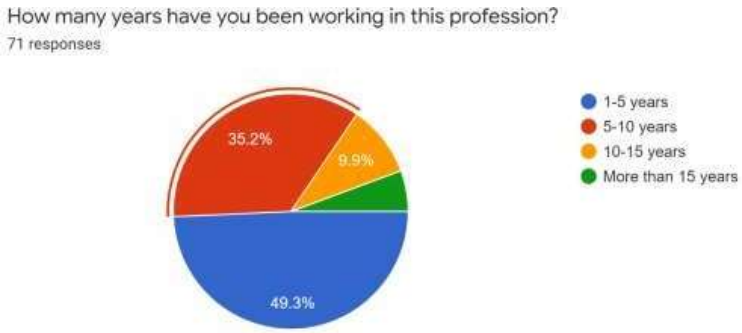
Figure and Table no1



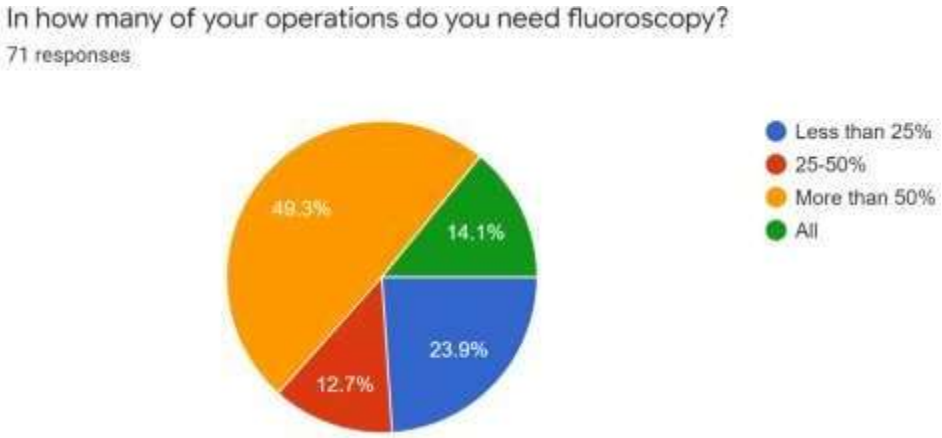
Gender	Counts	Percentage
Male	45	63.4%
Female	27	36.6%

Out of 71 respondents 63.4% were males and 36.6% were females.

Figure no 2



Results show that 49.3% doctors have 1-5 years of experience in said department while



35.2%have 5-10 years of experience in orthopaedic surgeries using fluoroscopy and rest of the participant shave more than 10 years of experience in the said field.

Figure no 3

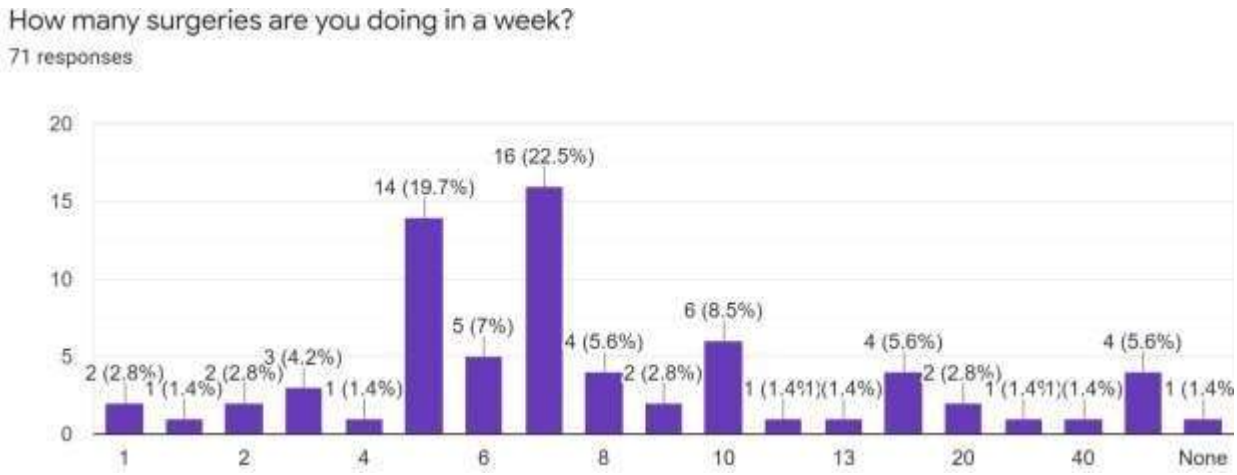


Figure no 4 Results show that most of the orthopaedic surgeons (49.3%) were using fluoroscopy in surgeries in more than 50%of surgeries they perform.

DISCUSSION

The use of fluoroscopic imaging in the orthopaedic theatre is necessary but not without the risk of exposure to ionising radiation. In order to minimize the risk to the fluoroscopic operator and the theatre staff, adequate knowledge and awareness pertaining to radiation safety are required. Based on this study's findings, radiation safety knowledge is clearly insufficient amongst orthopaedic surgical staff. Gendelbergetal. 11showed that after attending a structured radiation safety programme, orthopaedic registrars were able to reduceradiationtimeandexposurewhileoperating, resulting in decreased radiation exposure to registrars and patients. Similarly, the implementation of such a radiation safety training programme might benefit the participants of this study.

CONCLUSION

Most of the orthopedic surgeon s use fluoroscopy in theatre, as per survey most of the them lack some knowledge and are less concerned about the patient as a result patient confronts more radiation doses and also personal protective equipment's are either run available or underutilized when present. It can thus be recommended that a radiation safety and protection training program me be implemented within the orthopedic population throughout different selected hospitals

In Kashmir.Amajorityoftherespondentswerekeentoobtaintraininginradiationsafety.We believe that professional organizations and hospitals could initiate training programs for the orthopedic community in Kashmir to improve their radiation safety knowledge and practice and efforts should be made to address these deficiencies on a local andnational level.

REFERENCES

Troisi K, Ferreira N. Radiation exposure to orthopedic registrars in thePietermaritzburgmetropolitan complex.SAfrOrthopJ.2016.

Miller DL, Society for Interventional Radiology

.Interventionalfluoroscopy:Reducingradiationrisksforpatientsandstaff.JVascIntervRadiol.2009.

TsalafoutasIA,TsapakiV,KaliakmanisA,etal..Estimationofradiationdoses to patients and surgeons from various fluoroscopically guidedorthopaedicsurgeries.RadiatProtDosimetry.2008.

TunçerN,KuyucuE,SayarŞ,PolatG,Erdilİ,Tuncayİ.Orthopedicsurgeons' knowledge regarding risk of radiation exposition: A surveyanalysis.SICOT-J.2017.

Johnson DR, Kyriou J, Morton EJ, Clifton A, Fitzgerald M,MacsweeneyE.Radiationprotectionininterventionalradiology.ClinRadio.2001.

Mahajan A, Samuel S, Saran AK, Mahajan MK, MamMK.Occupational radiation exposure from C-arm fluoroscopy duringcommon orthopaedic surgical procedures and its prevention.JClinDiagnRes.2015.

Saroki AJ, Wijdicks C, Philippon MJ, BediA.Orthopaedic surgeons'use and knowledge of ionizing radiation during surgical treatment

forfemoroacetabularimpingement.KneeSurgSportsTraumatolArthrosc.2016.