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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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SAFE USE OF FLUOROSCOPY AND PERSONAL PROTECTION EQUIPMENT IN TRAUMA & ORTHOPAEDICS

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Abstract.

Introduction: Fluoroscopy is an indispensable tool that forms a significant part of the standard practice in many trauma and orthopaedic (T&O) procedures, as it facilitates dynamic assessment and aids intraoperative visualization and decision-making. It exposes patients and theatre staff to the potential hazards of ionizing radiation. Thus, the awareness of these hazards and proper use of personal protective equipment (PPE) will help mitigate increased exposure. This audit aimed to assess awareness regarding the safe use of fluoroscopy in T&O theatres, evaluate the level of PPE use and the knowledge of relevant guidelines, such as the British Orthopaedic Association (BOA) recommendations and local trust policy.

Methods: A prospective audit was performed between June and July 2023 using an online survey sent to healthcare professionals working in T&O theatres across two hospital sites. Data were collected using an online questionnaire and responses kept anonymous and thus implied consent was applied. Standards followed the local trust policy at the University Hospitals Sussex NHS Trust and the BOA guidelines.

Results: Of the 49 respondents, 59% were fully aware of radiation hazards, and only the theatre radiographers were all fully aware. Surgeons (56%) and anaesthetists (46%) considered themselves to have adequate knowledge of these hazards. Just over half of the respondents (69%) could identify the major source of radiation, while only 37% understood the effect of distance on dose exposure. Of those surveyed, 49% knew the local trust policy, while 39.6% knew the BOA guidelines; less than half had formal training (40.8%). The results showed that less than half of the participants used the full PPE highlighted in the guidelines. Statistical analysis showed that only 46% of participants used a protective lead apron/lead skirt with a coat and thyroid shield. Of the survey participants, 84% never used eye protection during fluoroscopy procedures, and 58% had never received any formal training on radiation safety.

Conclusion: The findings from this audit highlight the lack of awareness of the guidelines, resulting in suboptimal use of PPE in procedures with fluoroscopy. Recommendations for improvement include mandatory training for all theatre personnel. Methods of increasing awareness include using posters, performing regular audits to monitor the usage of PPE, and discussing the results in clinical governance meetings.

Key words. Fluoroscopy, personal protection equipment, theatre personnel, health hazard, audit.

Introduction.

The use of fluoroscopy is vital in orthopaedic theatres, and its use is increasing. Fluoroscopy aids the intra-operative visualisation of fractures, dynamic assessment, and decision-making and forms part of the standard practice for orthopaedic theatres. The use of fluoroscopy presents hazards to the health of both the patient and operating room personnel. Trauma and spinal surgeries pose the highest radiation risk, and the recent use of percutaneous and minimally invasive techniques is associated with more radiation exposure [1].

The international committee on radiation Protection [ICRP] has set the occupational exposure limit to 20mSv/year or 100mSv every five years. Per BOA guidelines, one year of exposure should not exceed 50mSv. Within these limits, the cancer risk is under 1 in 1000 over a working life of 47 years [2]. According to the BOA, the dose exposure of the majority of orthopaedic surgeons is under 2mSv/year - less than other specialities, such as vascular surgery, interventional cardiology, and interventional radiology [2-4].

The use of PPE in orthopaedic theatres during fluoroscopy is vital in preventing the hazards of radiation. Studies have shown that there is a lack of awareness among orthopaedic theatre personnel regarding the safe use of fluoroscopy equipment and PPE in preventing the hazards of radiation [5]. The participants in the study were 49 healthcare professionals who are regularly exposed to radiation in orthopaedic theatres. A questionnaire was used to check their awareness regarding the safe use of fluoroscopy in theatres, evaluate the level of PPE use, and assess their knowledge of relevant guidelines, such as the BOA recommendations and local trust policy.

Materials and Methods.

The study was conducted at two sites in an NHS trust: Worthing Hospital and St. Richards Hospital. An online questionnaire was developed and was completed by 49 healthcare personnel. The participants included all grades of healthcare personnel: surgeons, anaesthetists, theatre nurses, radiographers, Operating Room technicians and others exposed to radiation. Patients and other theatre staff not exposed to fluoroscopy were excluded from the study.

The questionnaire was developed after discussion with senior personnel and consisted of questions to check the level of awareness. The study was conducted from June-July 2023. The questionnaire had multiple choice questions and was sent by email to healthcare personnel using the NHS email and was filled online. The data analysis was done online as descriptive univariate analysis.

The study was registered with the audit department of Worthing Hospital with registration number 1871. The participation in the study was voluntary and the questionnaire responses were anonymous. Implied consent was applied in this study as by filling the online questionnaire the participants gave their consent to be included in the study.

Results.

The study included different healthcare professionals - the highest proportion of which comprised orthopaedic surgeons (37%), followed by anaesthetists (27%), theatre nurses (14%), radiographers (14%) and other healthcare professionals (8%). A majority of participants (59%) were exposed to fluoroscopy less than three times per week (Figure 1). Some participants responded that they had never been exposed to fluoroscopy and this data should not have been included in the results.

Type of PPE use:

The results showed that all participants used either a full lead apron (80%) or a lead coat and skirt (20%). In the former group, the majority of participants reported not using a thyroid shield (60%). Of those who used a lead coat and skirt, there was a higher proportion of thyroid shield use (14%) than without (6%) (Table 1). Most of the participants never used lead eyeglasses (84%).

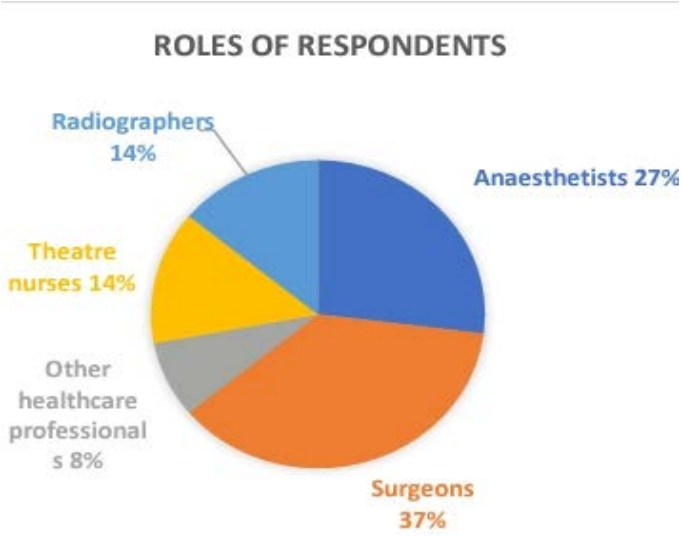

Figure 1. *Roles of various respondents in the operating theatre in percentage.*

Table 1. *Type of PPE use among participants of the study.*

	Full lead apron (percentage)	**Lead coat and skirt (percentage)**
Without thyroid shield	24 (48%)	3 (6%)
With thyroid shield	16 (32%)	7 (14%)

Awareness and training:

Only 59% reported being fully aware of the radiation hazards of fluoroscopy, and 49% of participants were aware of the guidelines related to radiation safety. Less than half received any formal training on radiation safety (42%), and three participants (6%) had never heard of this during their careers (Figure 2).

Technical knowledge:

Our audit assessed technical knowledge related to radiation safety by including the following questions:

Q1) What is the main source of radiation for theatre staff during fluoroscopy?

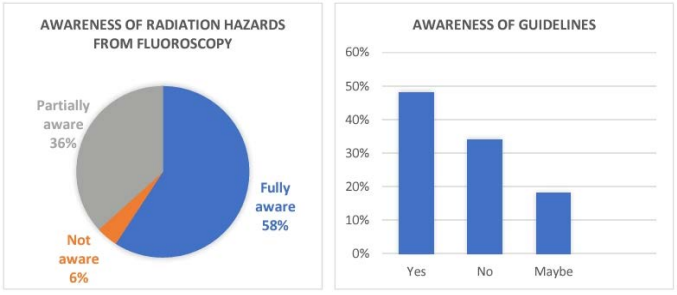

Figure 2. *Awareness of hazards and guidelines among participants of the study.*

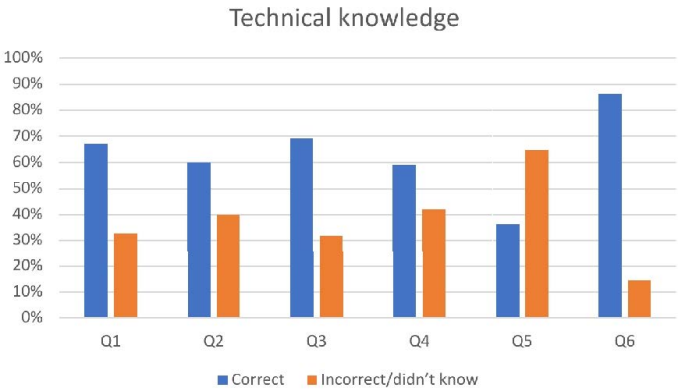

Figure 3. *Technical Knowledge as demonstrated by questionnaire among participants of the study.*

Q2) Which position is the safest and gives the best image?

Q3) Which of the following is a better technique to reduce patient dose?

Q4) When using live screening, which mode is better?

Q5) If a person moves twice as far from the radiation source, what will be the effect of radiation exposure?

Q6) What is the best practice regarding hand exposure to radiation?

Suboptimal knowledge was deemed <80% of correct answers. The results demonstrated suboptimal knowledge in all domains assessed except for hand exposure (86.4%). Less than half of the participants knew the direct effect of increasing distance on radiation exposure (36.4%). This is pertinent knowledge as the inverse square law states that increasing the distance twofold reduces radiation exposure by 75% (Figure 3).

Discussion.

Although the carcinogenic effects of high and moderate levels of radiation are well known, the effect of chronic low-dose radiation is not. A study done of workers in nuclear facilities demonstrated an increased mortality from solid tumour, lymphoma, and leukaemia [5]. Although radiation exposure in orthopaedic surgeons is low, there is a lack of longitudinal studies on the effect of radiation exposure in orthopaedic surgeons [2]. Studies from other healthcare workers have shown an increased risk of head and neck cancer and cataracts with exposure to ionising radiation [6-8]. Some self-reported surveys of female orthopaedic surgeons have shown an increased prevalence of breast cancer [9-11]. In the operating room, the primary surgeon has the highest exposure to radiation apart from the patient

[12]. Also, junior surgeons use more fluoroscopy than senior experienced surgeons [13-15]. In our study only 59% of the respondents reported being fully aware of the radiation hazards of fluoroscopy, thus there was a clear lack of awareness of adverse effects to exposure to radiation.

Some studies have shown that orthopaedic theatre personnel lack knowledge and training in radiation safety. A nationwide study based on an online survey among UK-based orthopaedic surgeons found that 38% received no formal training on radiation safety and poor use of radiation protection equipment [3]. Another study in South Africa found that most orthopaedic surgeons are unaware of radiation protection due to a lack of training and there was under-utilisation of radiation protection equipment [16]. In our study only 42% of the respondents reported having formal training in radiation safety.

There have been a few guidelines provided by British Orthopaedic Association (BOA) to reduce the exposure of radiation on healthcare personnel. The BOA suggests the following measures for radiation safety:

-Limit the time of exposure and prioritise distance and shielding

-Correctly position the C-arm

-Remain vigilant of scatter radiation from patient and walls

-Avoid the beam during screening

-Avoid using the image intensifier in a true lateral position

-If lateral view is required, consider a 70-degree view to direct the radiation away from the surgeon

-Avoid live screening

-Wear Personal Protective Equipment (PPE)

-Consider reducing the total number of images

Surgeons should use the following methods to avoid exposure to the axilla and lateral chest wall,

-Remain perpendicular to the beam

-Set up screens in the appropriate position to avoid twisting

-Position the axilla further from the beam

-Avoid lateral view and keep arms down during screening

In our study, only 49% of participants were aware of the guidelines related to radiation safety suggesting huge lack of awareness of radiation safety guidelines. Also, there was lack of technical knowledge as evidenced by participants failing to correctly answer questions on how to reduce radiation exposure. This study has highlighted the lack of awareness and training among healthcare personnel on radiation safety. The proper use of PPE can be encouraged by spreading awareness and training on radiation safety. This will help prevent any health hazards from radiation exposure among theatre staff. As efforts to improve awareness, we distributed posters with illustrations to educate healthcare personnel on radiation safety.

Limitations.

The limitation of the study was that we did not obtain equal responses from all grades of operating room personnel. Most of the responses were obtained from orthopaedic surgeons and anaesthetists. Orthopaedic surgeons constituted 37 % among the 49 participants of the study.

Conclusion.

There has been a lack of awareness regarding the hazards of radiation during the use of fluoroscopy in orthopaedic theatres and an inadequate use of PPE, leading to the risk of radiation exposure to theatre personnel. There has also been a lack of training on radiation safety among theatre personnel. The audit highlights this lack of awareness of radiation safety guidelines among theatre personnel, leading to suboptimal PPE use. The practice can be improved by generating awareness through proper training on radiation protection, which will enhance radiation safety and prevent health hazards among theatre personnel. The recommendations of this audit are mandatory training on radiation safety, posters to improve awareness and regular re-audits to monitor compliance to set standards.

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