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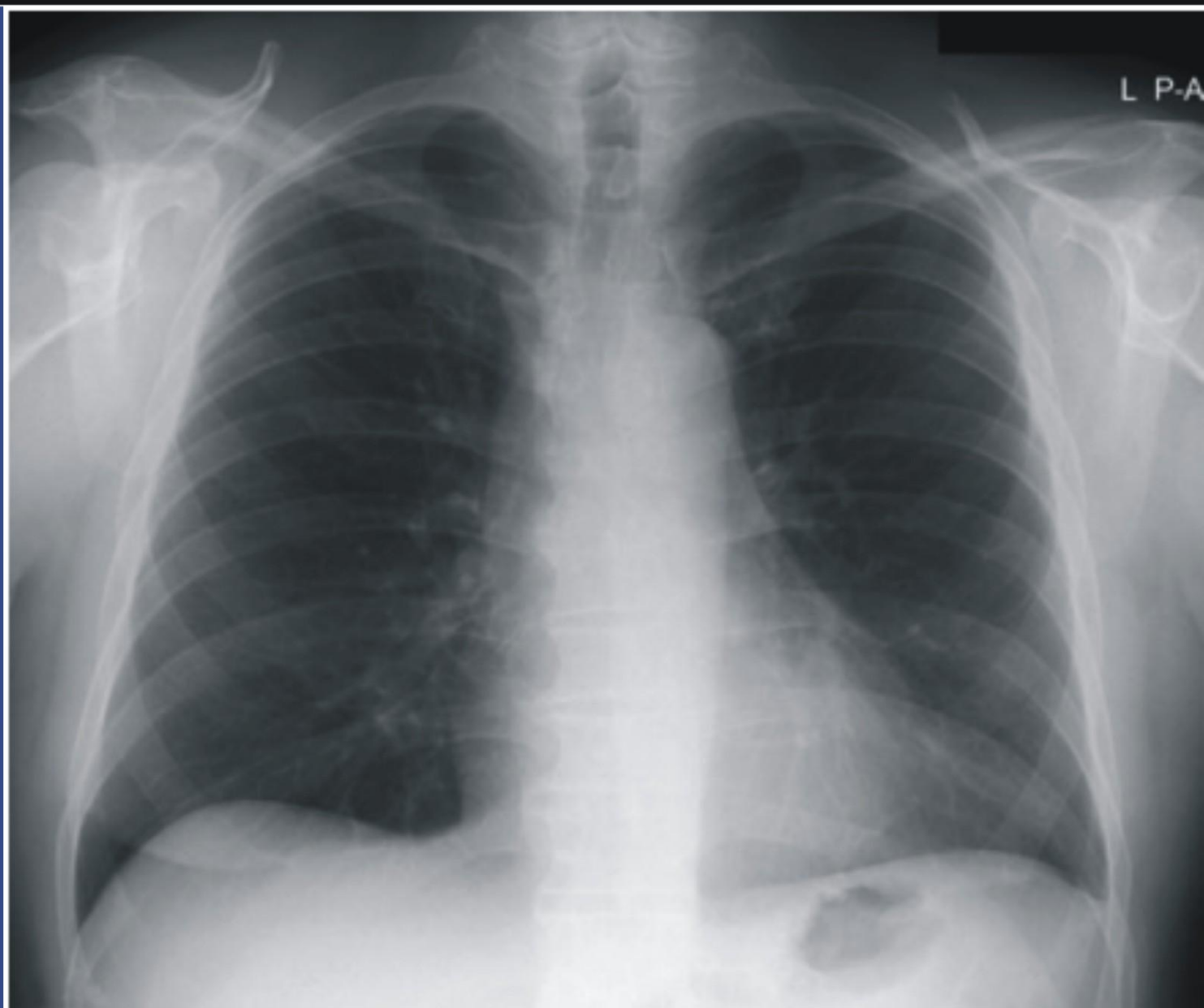
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BOOK OF ABSTRACTS

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Radiography in Healthcare Transformation

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Hysterosalpingography: A Re-Emerging Study in Health Care Transformation - Our Experience in Zaria

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Background: Hysterosalpingography (HSG) is a commonly performed examination due to recent advances and improvement in reproductive medicine. It involves the radiographic delineation of female reproductive organs. The major role of HSG is to investigate the uterus and the fallopian tubes which is achieved following the introduction of contrast agent into the female reproductive system.

Objective: The objective of this study is to analyze the common pathological requests and findings of HSG patients in Ahmadu Bello University Teaching Hospital, Zaria, Nigeria.

Methodology: Two hundred and thirty-five (235) HSG request cards, reports/films were reviewed retrospectively in order to determine the common indications, provisional diagnosis, and age of patients undergoing HSG procedure. The result was analyzed using SPSS version 16.0 and categorized according to their clinical findings.

Results: Results showed 8.9% (n=25) cervical abnormalities. Uterine abnormalities accounted for 25 % (n = 67), while abnormalities of the fallopian tube and peritoneal adhesions had 44.1% (n = 124) and 19.57% (n = 55), respectively. Most of the referrals (40.4 %; n = 95) were for secondary infertility as opposed to primary infertility (29.4 %; n = 69).

Conclusion: Hysterosalpingography is effective in evaluating the internal organs of female genital tracts in clinically indicated cases of infertility. It is a re-emerging study in

reproductive medicine and valuable in health care transformation.

Keywords: Hysterosalpingography, contrast agents, infertility, abnormalities

Radiographic Artefacts Encountered in Clinical Practice

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Objective: To investigate and describe the trend of artefacts encountered in the course of our work in the radiology department of a teaching hospital.

Methodology: A prospective study carried out in the Radiology Department of the Nnamdi Azikiwe University Teaching Hospital, Nnewi between June 2011 to June 2013. Radiographs were viewed with the aid of a viewing box. Those with artefacts were separated into marked wallets according to their common origin. Ambiguous artefacts were all kept in a separate folder. Their origin were later decoded through a review of the literature as well as observation of radiographers and darkroom assistants at work. Where there were further uncertainty, simulation was done in the darkroom to replicate artefacts.

Results: Six trends of artefacts and their appearance were noted viz packaging (dark), procedure (greyscale), patient (white), pre-processor (dark), processor (greyscale) and post-processor (grey). Fourteen distinct groups of artefacts from the six trends were isolated.

Conclusion: Both common and rare artefacts are still a challenge in the centre.

Chest X-Ray, a Veritable Tool in the Diagnosis of Opportunistic Infections

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Background: Opportunistic infections (OIs) and malignancies resulting from depletion of the immune system are major causes of morbidities and mortalities among immune-suppressed patients. Prophylaxis and early treatment of OIs have been clearly shown to prolong and improve the quality of life for people living with these opportunistic infections. An important diagnostic tool in assessing the respiratory complications as well as the manifestations of HIV and other immune-suppressed infections is the chest x-ray. Chest radiographic pathologies are common and the nature and distribution of pulmonary and cardiac findings on the chest radiograph will often suffice in suggesting a diagnosis or differential diagnosis.

Method: This was a retrospective, cross sectional study of chest x-rays of immune-suppressed patients.

Findings: Findings indicate that bacterial pneumonia and acute bronchitis are currently the most common causes of respiratory diseases in HIV and immunosuppressed patients.

Contrast-Enhanced and Targetted Ultrasound

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Ultrasonic imaging is becoming the most popular medical imaging modality, owing to the low price per examination and its safety. Contrast-enhanced ultrasound (CEU) is a major breakthrough for ultrasound imaging in recent years. By using a microbubble contrast-agent (microscopically small gas bubbles encapsulated in biodegradable shells) and contrast-specific imaging software, CEU is able to depict the micro- and macro-circulation of the targeted organ, which in turn leads to improved performance in diagnosis. Due to the special dual blood supply system in the liver, CEU is particularly suitable for liver imaging. It is evident that CEU facilitates improvement for characterization of focal liver lesions (FLLs), detection of liver malignancy, guidance for interventional procedures, and evaluation of treatment response after local therapies. Contrast-enhanced ultrasound has been demonstrated to be equal to contrast-enhanced computed tomography or magnetic resonance imaging for the characterization of FLLs. In addition, the applicability of CEU has expanded to non-liver structures such as gallbladder, bile ducts, pancreas, kidney, spleen, breast, thyroid and prostate. The application of CEU in the clinic is continuously evolving.

Roadmap to Evidence-Based Radiography Practice and Specialization

Sikiru, GB; Dambele, MY and Ezinma, MC

One of the known philosophical facts is that ‘an idea materializes if people believe in it, and show sincere commitment and enthusiasm towards its realization.’ Therefore, to achieve evidence-based radiography practice and specialization will involve a lot of strategies, logistics and readiness on the part of current practising medical radiographers to sacrifice a lot of things. In my book (unpublished) titled “unveiling the veiled medical profession” it was noted that the future of this profession is unlimited, hence there is need to locally have at least short, and long term plans of 5 years and 10 years, respectively and by setting new criteria for approving medical radiography as a course in any institution in Nigeria. The strategies involve training and appointment of departmental investigation requests approval officer through evidence-based criteria of international standard (EBCO), daily or weekly image critique seminar (ICS), strengthening the profession by starting B.Sc ultrasonography, Nuclear Medicine Imaging, MRI, CT, Molecular Imaging, Radiation Protection, Image Interpretation, Forensic Radiography and B.Sc Therapeutic Medical Radiography, etc. This can be divided among the existing current institutions offering medical radiography /imaging. But the starting pedestal should be giving vector to our honorable Board (RRBN), the cherished professional association as well as encouraging M.Sc students to specialize in curriculum development in medical radiography, radiography education and radiography research.

Bivariate Assessment of Image Reporting by Some Nigerian Radiographers

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Background and aim: A survey of image reporting by Nigerian Radiographers in clinical practice was carried out by the use of chest radiographs and questionnaire. The aim was to assess the sensitivity and accuracy of experienced radiographers (n = 8, \geq 5 years post-qualification) in the reporting of chest radiographs, while the questionnaires were used to ascertain the establishment of role extension for radiographers image reporting in radiodiagnostic departments.

Methodology: A total of ten (10) chest radiographs were reviewed by the participating radiographers, bringing the total number of radiographers reports to eighty (80). These diagnostic reports were compared to the ‘gold standard.’

Results: An overall sensitivity and specificity of 0.7246 (72.5%) and 0.4546 (45.5%), respectively, and with an accuracy of 0.69 (69%) were recorded. Response from questionnaires revealed that role extension in image reporting was not practiced in government hospitals, and the participants believe that non-reporting by radiographers could be due to the hospital policy, unwillingness of radiologist to collaborate with radiographers, and lack of adequate knowledge on the part of some radiographers.

Conclusion: This significant and respectful level of accuracy shows that role extension in image reporting of chest radiographs should be encouraged, promoted and actively implemented.

**The Inevitability of Mentoring as a Tool
for Professional and Leadership
Capacity Development in Radiography
Practice**

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This paper is presented due to the identified current challenges in the profession. It address principles for effective mentoring that ensure growth in practice, professional sustainability and reliable transmission of core values. The consequences of apathy and neglect of mentoring to the future and quality of radiography profession in Nigeria will also be discussed.

**Automatic Processor Chemical
Admixture by Replenishment Pumps
Leading to Poorly Processed
Radiographs (A Case Report)**

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Objective: To identify and resolve the cause of a foggy, seemingly underpenetrated and diagnostically poor radiographs emanating from the darkroom.

Method: Fogginess was initially attributed to weak and adulterated chemical which new chemical supply and change did not resolve. Exposure factors and electrical power fluctuations were then suspected, but adjustments in these did not bring the

desired solution. A team of four professional groups with the radiographer as head (radiographer, radiologist, darkroom assistant, and a VAMED engineer), who were informally assembled, formulated a hypothesis which led to a practical solution.

Results: It was hypothesized that there was a mixing and neutralization between developer and fixer. When the automatic processor was dismantled, the replenishment pipes were seen wrongly connected.

Conclusion: A wrongly programmed automatic processor is a possible, but rarely investigated, source of poorly processed films. Radiographers should embrace a deeper interest in the automatic processor for a rewarding darkroom experience and rewarding trouble-shooting during malfunction.

Keywords: Automatic processor, radiographer, replenishment, chemical

Radiography in Healthcare Transformation: Agenda for the Next Decade

Felix O. Erondu, B.Sc, M.Sc, Ph.D

It is a well established fact that Nigeria has made tremendous progress over the past 20 years. The progress spans various sectors such as education, training, regulation, business and career progression in the public sector. The practice of radiography has continued to impact positively on every aspect of medical specialties including cardiology, neurology, ophthalmology, orthopaedics, obstetrics and gynaecology. The Nigerian radiographer is however, confronted by the quality of a rapidly developing profession with recent breakthroughs in optical coherence tomography, elastography, electromagnetic acoustic imaging, hybrid imaging and prospects for role extension. The full potentials of radiography and its impact in healthcare delivery in Nigeria will continue to elude us if critical flaws in education, practice, infrastructure, legislation and inter-personal cooperation are not addressed.

Mentorship in Radiography: an Indispensable Tool for Sustainable Healthcare Transformation

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Background: The concept of mentorship has gained widespread popularity in literature across different walks of life owing to the significant benefits attached to it.

Purpose: This paper intends to discuss the need for mentorship in radiography, as an indispensable tool for a sustainable healthcare transformation, taking clues from other health science disciplines and medicine.

Method: Authors reviewed relevant literature on the subject to have an in-depth and updated knowledge both in the health sciences as well as in other disciplines. Search engines such as Google Scholar, My Websearch, and data base such as Science Direct, Hinari, Taylor and Francis and Medknow were consulted. Several articles that discuss mentorship across the various disciplines were reviewed. Those with ideas and concepts that fitted into the purpose of the study were included.

Results. Several definitions and types of mentorship exist across different walks of life based on literature. However, we decided to adopt the definition of mentorship and types of mentorship by Feldman, who defined mentorship “*as a dynamic, reciprocal relationship in a work environment between an advanced career incumbent and a beginner, aimed at promoting the development of both.*” The uniform agreement across various disciplines is that mentoring is a crucial component of success. However, its application in radiography is inadequate.

Conclusion In view of the apparent benefits accruable to mentorship globally, stakeholders in radiography should make mentorship a priority, if we must maintain our role in a sustainable healthcare transformation.

Keywords. Mentor, Mentee, Protégée, Coaching, Radiography, Healthcare transformation

Evidence-Based Methods and Limits for Digital Compression of Chest Images in Telemedicine and Teleradiology

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Background: As hospitals in Nigeria move towards filmless radiography to digital technology, it is expected that the volume of uncompressed data will create problems of storage and transmissions. Unequivocally, digital image compression will play a key role.

Purpose: Our primary aim is to establish the optimum compression ratio above which image quality begins to be compromised for digital paediatric chest radiographs by investigating various compression levels and corresponding ratios and, determine the effect on image quality. Our second aim is to determine the effect of patient dose reduction on the established optimum compression ratio.

Methods: We subjected 12 paediatric chest digital images produced using different radiation doses to three different compression levels: 75%, 50% and 25% of the original images using advanced JPEG Compressor 2009 r.2 by WinsoftMagic Inc., USA, comparable with JPEG2000 or wavelength algorithm. The corresponding

compression ratios were 1:77, 1:109 and 1:221. Two radiologists unaware of the mAs settings and compression levels, assessed the diagnostic image quality and provided ranked scores for visibility of details in seven anatomical structures scored individually from 0.2. Maximum scores for each image were computed to determine the degree of visibility of the anatomical details as a measure of diagnostic image quality in each mAs setting for the 3 compression levels/ratios. Data analysis was done using SPSS 11.0 for windows software.

Conclusion: Our results concluded that compression of paediatric chest digital images can be achieved with no effect on image quality up to 25% compression level, and also maintained with patient dose reduction.

The Role of Radiography in Primary Healthcare Delivery

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Aim: This paper will review the current role of radiography in the existing primary healthcare delivery framework in Nigeria, identify the factors mitigating against this role and proffer solutions for expanding the role to make radiography an integral part of primary healthcare delivery.

Background: The eye of medicine is critical to effective primary healthcare delivery. Sadly, this has been severely neglected. Ultrasound and X-Ray play vital roles in the successful implementation of primary healthcare delivery. Failure to utilize this service has led to an increase in cost and delay in treatment (while patients travel long distance to access diagnostic services), and inappropriate and missed diagnosis resulting in increased morbidity and mortality.

Method: Using a narrative approach, this paper will discuss the current role of radiography based on the legal framework setting up primary healthcare delivery in Nigeria. It will also focus on the constraints against this role and how the role can be enhanced to reposition radiography to take its rightful place in primary healthcare delivery in Nigeria.

Outcome: At the end of this presentation, proposals will be presented with the objective of expanding the current role of radiography in the primary healthcare delivery in Nigeria. Participants will also understand how vital their input are. The overall outcome is an improved primary healthcare delivery leading to a reduction in morbidity and mortality in Nigeria.

How to Perform Cardiac CT Angiography

Emeka Ifeakor

In the past four decades, Nigeria has witnessed increasing urbanization and changing lifestyles, factors that have, in turn, raised the incidence of non-communicable chronic diseases, especially cardiovascular diseases. At the same time, social disintegration and inequality, compounded by the dwindling economy in many countries in sub-Saharan Africa, have seriously hindered the response to these non-communicable diseases. Cardiovascular diseases have reached near epidemic proportions in Africa. According to the World Health Report 2002, cardiovascular diseases accounted for 9.2% of total deaths in the African region in 2001, and hypertension, stroke, cardiomyopathies and rheumatic heart disease were the most prevalent causes. Moreover, it is anticipated that by 2015, 80 to 90 % of all cardiovascular diseases worldwide will occur in low and medium-income developing countries of Africa, Asia and Caribbean Islands. This increase is due to many factors, including the growing use of tobacco and increases in hypertension, dyslipidaemia and diabetes.

Other factors include urbanization, reduced physical activities, atherogenic diet, increases in obesity, and the increasing longevity of the population. A recognized set of standards in patient diagnosis, risk status and management is a prerequisite for achieving the best outcomes for coronary artery disease and myocardial infarction patients. In developed nations, working groups, task forces and well established plans have been instituted to create these standards, with protocols continuously updated to improve patient outcomes. Examples include GRACE, CRUSADE, ACTION, the National Heart Attach Alert Programme (USA), and similar programmes in most European countries, China, Japan, Australia and New Zealand. All these groups have contributed to registering, documenting and standardizing the management of ACS. They have also contributed to reductions in mortality from coronary artery disease and myocardial infarction. Results have included reductions in time of needle, time to balloon, and time to transfer patients by emergency medical services. Recent technological advances in CT has enabled non-invasive CT coronary angiography play significant role in accurately detecting coronary artery stenosis in patients. This presentation therefore, aims to demonstrate how cardiac CT can be done effectively.

Echocardiography: A Transforming Imaging Modality in the Management of Heart Diseases

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The impact of echocardiography in the management of heart diseases cannot be underestimated because of its non-invasive nature. It is also gaining prominence in cardiac interventional therapy and integrated transcatheter procedures for the closure of peri-membraneous ventricular septal defect. The gradual change in lifestyle, even in Africa, is launching many into cardiovascular conditions that need echocardiography. Echocardiography, apart from its usefulness in the investigation of congenital malformations, is extensively used in non –communicable cardiac conditions such as growth (tumor), valvular degenerations, cardiomyopathies, prostheses, pericardiac heart disease, hypertensive and rheumatic heart conditions. The aim of this presentation is to demonstrate the various heart conditions that can be investigated with non-invasive echocardiography at great success and to create awareness among practitioners in the usefulness of echocardiography in clinical practice. Effort will also be made to highlight those who should undergo echocardiography.

Standardization of Curriculum for Improved Healthcare

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Background: There is generally fair standardization, poor implementation, and delayed review of existing curriculum in healthcare delivery in Nigeria. The fundamental flaw in the healthcare sector is not only as a result of non-standardization of curriculum but also, the effective evaluation and implementation of the curriculum.

Objectives: To emphasize the need for standardized curriculum for healthcare profession, for effective and efficient healthcare delivery in Nigeria and to stress the need for learners to develop knowledge skills and attribute needed learning.

Methods: This is mainly a retrospective study of reviewed literature by using Google search.

Results: Fidelity of implementation of curriculum and proper assessment of students in healthcare profession requires further improvement. There is little variation in the curriculum in use by different healthcare professional institutions in Nigeria. There is fair translation of curriculum into practice in

the healthcare system and poor progress-monitoring procedures in implementation of the curriculum.

Conclusion: Curriculum is the core of education and has impact in all educational activities. Given the importance of standardization of curriculum in education and healthcare, it should be structured to achieve national education goals and also improve healthcare. Curriculum should be standardized in all training institutions in Nigeria, and reviewed every five years to reflect modern trends and dynamism in healthcare delivery.

Keywords: Standardization, curriculum, healthcare

An Assessment of Radiographic Artefacts in Sub-Standard Radiographs in a Public Hospital in Owerri, Nigeria

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Background: It is known that artefacts are densities, marks or areas of darkness that can impede film interpretation. Error can occur at every step of the development process, but suffices to say that the main component of film artefacts is human error and very little or nothing is attributed to manufacturing error. In view of this, proper understanding of different forms of artefact is important so as to proffer ways and guidelines to bring this to the lowest ebb as possible.

Aim: The study brings to focus the concept of object and image relationship, the various forms of artefacts grouped in 8 broad headings, and to determine which artefact is most predominant.

Material and methods: 125 films were collected randomly from the reject film packs in radiology department, Federal Medical Centre, Owerri from April 2010 to June 2011. Various forms of artefacts were identified and analysed using sorting method. The artefacts were categorized into their respective groups. Percentage was used for analysis to determine which artefacts occurred most frequently.

Results: Fingernail marks was 28.57%, while surface marks such as algae surface marks had the lowest occurrence with 0.72%.

Conclusion: It is important to understand the concept of object and image relationship based on the type of imaging modality in order to avoid the 'three time periods' in which artefacts can occur especially in X-Ray imaging.

Keywords: Radiographic artefacts, sub-standard radiographs

The Role of Radiography in Primary Healthcare Delivery in Nigeria

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Background: Health is in the concurrent legislative list of Nigeria. Primary healthcare delivery has been seen as a primeval system involving common health centres or mere clinics in the rural areas and communities where minor ailments are treated. Considering the increasing population in Nigeria, demand for good health in the grassroots and the technological advancement in the imaging field, radiography has roles to play in the tiers of healthcare. A role which, when well defined, will promote red dot system, eliminate quackery and proffer other benefits.

Aim: The study brings to focus the various levels of healthcare services in Nigeria, the function of each level, how they inter-relate with each other and how radiography has a role to play in service delivery especially, in primary health centres.

Methods: Literature and manuals of hospital management system in Nigeria were reviewed. A survey of 27 health centres in the 27 local government areas (LGAs) in Imo State was carried out in a view to ascertain the presence of radiographers in their employment.

Results: No radiographer was found employed in any of the 27 LGAs.

Conclusion: The health of the population of the country determines the strength and the future of that country. Understanding of the level of healthcare services in Nigeria is therefore, pertinent. Radiographers have a key role to play in the primary healthcare delivery, a role which will encourage and promote red dot system and eliminate quackery and proffer other benefits.

Keywords: Role, radiography, primary healthcare delivery

Utilization of Radiologic-Pathologic Correlative Studies for Evidence-Based Radiography Practice

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The early detection of evidence-based medicine may have first been introduced by Sacket in 1992, stating that “Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual expertise with the best available external evidence from systematic research.” Whereas the coined phrase, ‘evidence-based radiography’ is defined as “radiography informed and based on the combination of clinical expertise and the best available research-based evidence, patient preferences and resources available” and was first applied by authors, including Bjorg Hafslund et al. (2007). Radiologic-pathologic correlative study is

a promising methodology in providing evidence for radiography practice and should be encouraged as would be shown in the current presentation for radiological diagnosis of adenomatoid odontogenic tumor (AOT). The radiological misdiagnosis of AOT was revealed to be close to 95%. However, using radiologic-pathologic correlative studies, our work established the reason for the unacceptably high misdiagnosis rate, based on the technical limitation of a preferred radiographic method. This discovery re-created the protocol in the literature for radiological diagnosis of AOT, thereby showcasing evidence-based radiography practice using radiologic-pathologic correlative studies.

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Adejoh T (Chairman); Joseph DZ; Nkubli FB; Balogun-Adebiyi IR; Okeji MC