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Current status of quality assurance in diagnostic imaging departments in Ghana

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Abstract

Background A good system of radiological quality assurance should aim to do more good than harm. In addition, it should limit the inequity that may arise from a conflict of interest between individuals and society as a whole. Radiological facilities therefore should have in place quality assurance arrangements that maximize the net benefit of radiological examinations to the patients.

Purpose of study To investigate the current status of quality assurance within selected diagnostic imaging departments in Ghana.

Method A qualitative phenomenological study using a semi-structured questionnaire for an interview and observation was employed for data collection. The study was carried out in twenty-eight hospitals comprising a representative randomized sampling of teaching, regional and district hospitals as well as quasi-government hospitals across the country.

Results The study identified a lack of quality assurance systems in all the selected hospitals. There were no formal organizational structures, procedural protocols, operational manuals and exposure charts for diagnostic imaging in the hospitals.

Conclusion The absence of quality assurance activities and functional supervisory structures for diagnostic imaging services in Ghana could have adverse effects on quality service delivery. There is therefore an urgent need for robust action to implement realistic quality assurance programs in these hospitals.

Keywords

Service delivery, quality control.

Introduction

Provision of high quality healthcare to consumers must be the goal of all medical services and so the Ghanaian government's policy on health to provide affordable quality healthcare to the people is both appropriate and laudable^[1]. In Ghana, as elsewhere, imaging departments play an important role in facilitating the above goal through the provision of diagnostic services and are widely used because of their known benefits to society^[2]. However, despite their extensive usage worldwide and known benefits, diagnostic x-rays are by far the largest contributor to the collective dose from all man-made radiation sources^[3-5].

It has been increasingly recognised that quality assurance (QA) programmes play a fundamental role in establishing and maintaining systems to support high quality healthcare. Defining quality means developing expectations or standards of quality, as well as designing systems for quality^[6]. A good system of radiological quality assurance (QA) should aim to do more good than harm and should have in place quality measures that maximize the net benefit for patients by ensuring high quality patient care. Radiological

facilities therefore should have in place arrangements to assess periodically the performance of x-ray equipment and manage them in a way that will enable rapid and effective remedial action to be taken when required. QA programmes and quality control (QC) protocols form an essential part of the optimization process in diagnostic imaging^[7]. Therefore, such programmes covering physical and technical parameters associated with the types of x-ray examination being carried out need to be instigated in every medical x-ray facility. Regular patient dose measurements, film reject analysis (FRA), and image quality assessment need to become part and parcel of the ethos and norms of every diagnostic imaging department. The Ghana Health Service has established an institutional care directorate to oversee quality assurance issues in the health sector. However, divisions, policies and guidelines formulated under this directorate failed to include diagnostic imaging. Such an omission is of concern since QA directed at equipment and operator performance is of known value in improving diagnostic information content, reducing radiation dose, reducing medical costs and improving departmental management and the qual-

ity of patient care.

Previous Ghanaian studies of medical diagnostic imaging found that radiation doses within imaging departments were above international recommended averages^[8, 9]. Another study also identified unqualified staff operating x-ray facilities in some mission hospitals in Ghana as well as the use of equipment that lacked essential radiation protection facilities, such as beam limiting devices^[10].

The purpose of this study therefore was to undertake a qualitative assessment of the current status of QA within selected diagnostic imaging departments. The intention being to identify areas where action is needed in order to guide future studies addressing the development of appropriate cost effective QA systems for optimising protection with the best possible improvement in image quality and service delivery.

Study design and methodology

Phenomenological research focuses on the subjective experience of the individuals studied as it attempts to understand and describe a particular phenomenon^[11-15]. The focus of this study lent itself particularly well to the use of a qualita-

tive research methodology (interviews and observation). It enabled a greater understanding of the radiographers' experience in QA whilst at the same time describing and explaining the social world of radiographers practicing in Ghana. The study was carried out from July to December 2011 using observation and semi-structured interviews as research tools. The study involved participants from a variety of practice environments in Ghana. Observations were carried out in 23 hospitals with diagnostic imaging facilities. This sample comprised a representative randomized sampling of teaching, regional and district hospitals as well as quasi-government hospitals across Ghana. Drawing participants from a diversity of practice settings promoted increased participation in the study and contributed to the transferability of findings.

A purposive non-probability sampling technique was used to select the participants for the study. Participants were registered radiographers licensed to practice radiography in Ghana and who were competent to give informed consent to participate in the study. Participants were employed full time and were eligible to participate regardless of their level of educational preparation from entry into radiography practice (whether technician or a radiographer). Twenty-eight (28) radiography staff members (radiographers and technicians), including five departmental heads, constituted the primary sample for the study.

After reviewing the relevant literature^{116, 171} and methodologies, a checklist (Table 1) of information relevant to QA auditing was compiled. The researcher then visited the selected hospitals and used the checklist during the study period to observe the listed items in the various settings. At each imaging department the researcher requested the relevant information on the checklist from the radiographer in charge and spent a day observing how the radiographer was carrying out radiological examinations from the time of entry and departure of a patient. The results of the observation were recorded and are reported on in the results section.

Semi-structured interviews were undertaken with departmental heads of five of the selected hospitals. The interviewees were selected based on their long professional experience (minimum 10 years) with the diagnostic imaging service in

Ghana. Prior to the interview, separate meetings were arranged with the selected departmental heads to update them on the rationale and objectives of the study and also to seek their consent to conduct the study. Appropriate appointments were booked with the interviewees in order to establish the necessary rapport needed for the interviews. At the time of the face-to-face meeting with the participants the researcher explained their rights and described the study. Written permission to audiotape the interviews was acquired from all participants. Data were collected via face-to-face audio taped interview with the participants, using a semi-structured interview process. The use of a semi-structured interview technique ensured that required information was obtained from the participants while at the same time allowing them freedom to respond and to illustrate their thoughts. Interview guides were prepared in a manner that gave participants the freedom to respond and to illustrate concepts in their own words as stories or descriptions of incidents. Question prompts were used to elicit further information during the interview process. The interviews that took place were mutually convenient for all. Brief demographic information addressing participants' age, gender, level of imaging experience and years in professional practice were collected during the interview. This information was used to create a profile of the radiographers who participated in this study.

An audit trail of researcher generated data was developed to document personal thoughts, observations, and decisions during the research process. Organized and dated field notes were recorded as a means of capturing critical contextual data during the interview process and methodological decisions and personal insights were recorded in a reflective journal throughout the study to promote qualitative rigor. The recording of field notes provided valuable contextual data and significantly contributed 'to the tick description necessary in the reporting of qualitative research'¹¹⁵. To promote investigative rigor it was critical to record field notes in a manner that was descriptive while at the same time synchronizing them with other data. Methodological documentation was necessary to ensure reliability of the study, being continuously mindful of the need to alter strategies as necessary as the study design emerged throughout

the qualitative research process. "The researcher's records of the impetus and rationale for all on-going methodological decisions are an integral part of the audit trail in ensuring, and later substantiating, the rigor of the investigation"¹¹⁷. The use of analytic documentation also promoted the rigor of the data analysis.

Participants signed the informed consent form. They were informed that (i) their participation in the study was voluntary, (ii) they could refuse to answer any questions, and (iii) they could withdraw from the study at any time without prejudice. They were assured of their anonymity and confidentiality. Ensuring anonymity enhances the validity of a survey: participants could not be identified hence tended to respond to questions on sensitive issues more truthfully. The credibility of qualitative data is improved through long engagement with participants or triangulation of data collection. In view of this sufficient time was allowed to encourage the participating radiographers to tell their stories. An unstructured interview process allowed for depth and breadth of the study data. The goal in qualitative studies is to obtain a rich account of the experiences of participants, not to generalize findings to a broader population. The concept of applicability is not intended to invalidate the experiences of those who may describe different experiences given similar situations. The interviewees were occasionally asked to comment on statements made by other participants. Responses that were similar enable the development of the themes and categories which emerged during the analysis process whilst those that were different helped to identify unique aspects of each interviewee's experience.

This study emphasized the uniqueness of the participants' experiences with QA and radiation protection. However, there was consistency in findings as the interviewees' stories on QA and radiation protection unfolded and on-going data analysis revealed similarities across participants' experiences. Consistency in this study was also ensured through a consensus discussion between the researcher and an independent expert to identify themes and categories. The researcher maintained a reflective journal to record thoughts and observations that led to study decisions to ensure trustworthiness of study findings. Experts were routinely consulted during methodo-

logical and analytic decision-making to ensure neutrality.

Data analysis

The qualitative data were analysed utilizing the process of thematic analysis in an attempt to construct a meaningful conceptual pattern across the participants' responses. The interview audio tapes were transcribed. Accuracy was verified by listening to the tapes while simultaneously reading the transcripts. Corrections or additions to the transcripts were made as necessary. Wide margins were used in the transcriptions to permit ease of coding and note taking. The process of coding the data occurred by reviewing the transcripts line by line. Writing keywords, using subject's own words whenever possible, in the right margin helped to identify the substance of the data. Attention focused on recognizing constantly repeated words, phrases, or themes within the data for later retrieval and sorting. Coding, comparison, and recording occurred until patterns or categories began to emerge.

During the initial phases of data analysis categories were as broad as possible without overlapping. Subsequently it became possible to refine the data into smaller categories. In addition, the researcher's thoughts and ideas that were stimulated by reading the transcripts during the coding processing were noted in his reflective journal as a means of promoting neutrality and self-awareness since thoughts, feelings, and biases that surface may negatively affect the data analysis process. Field notes taken during the interviews covered non-verbal behaviours of participants. Demographic data were analysed using descriptive statistics. Findings were synthesized and reported using actual examples from the data to demonstrate that the results were grounded in the data thus were not the researcher's perceptions.

Results

Twenty-eight (28) radiographic staff members from 23 hospitals participated in the study. Five of them who were departmental heads participated in the interview session. The remainder comprised six radiographers and 17 radiologic technicians who were in charge of the imaging rooms observed during the study. Table 2 shows demographics of the participants (n=28). Males were overwhelmingly the majority (n=24). Almost half (46.4%) were in the age group of 31-41 years. The

Table 1: Checklist for QA status monitoring.

	Items	Responses	Remarks
		Number/Yes/No/always/Sometimes/Never	
1	Number of X-ray rooms available in the hospital		
2	Number of radiologists in the hospital		
3	Number of radiographers in the hospital		
4	Availability of quality assurance committee (QAC) to monitor and implement quality issues		
5	Availability of a documented quality assurance program		
6	Documented QC test protocols		
7	Availability of quality control test equipment		
8	Frequency of performance of quality control on the X-ray machines		
9	Radiographers involvement in equipment QC testing		
10	Frequency of film processor QC/Cleaning		
11	Equipment performance record keeping		
12	Documented training program and records		
13	Availability of radiographic positioning manuals		
14	Availability of radiographic exposure charts		
15	Availability of documented acceptable criteria for diagnostic radiographs		
16	Availability of radiation protection devices		
17	Frequency of usage of radiation protection devices		
18	Reject analysis program		
19	Patient dose audit program		
20	Availability of patients' records		
21	Keeping of patients' past films		

Table 2: Gender and age of participants (n=28)

	Age in years				Total
	21-30	31-40	41-50	51 and above	
Male	2	11	8	3	24
Female	0	2	1	1	4

Table 3: Participants' grade (n=28)

Radiographers	(n)	Radiological Technicians	(n)
Chief radiographer	2	Senior technical officer	1
Assistant chief radiographer	2	Technical officer grade 1	9
Principal radiographer	1	Principal technical officer	7
Senior radiographer	3		
Basic radiographer	3		

participants' years of experience in imaging varied among the hospitals surveyed. The study (Figure 1) revealed that most of the participants had been qualified for 6-10 years; only two had qualified within the last year. In general over 75% of the participants had been practicing for less than 16 years.

There are two categories of staff in diagnostic imaging in Ghana: radiographers

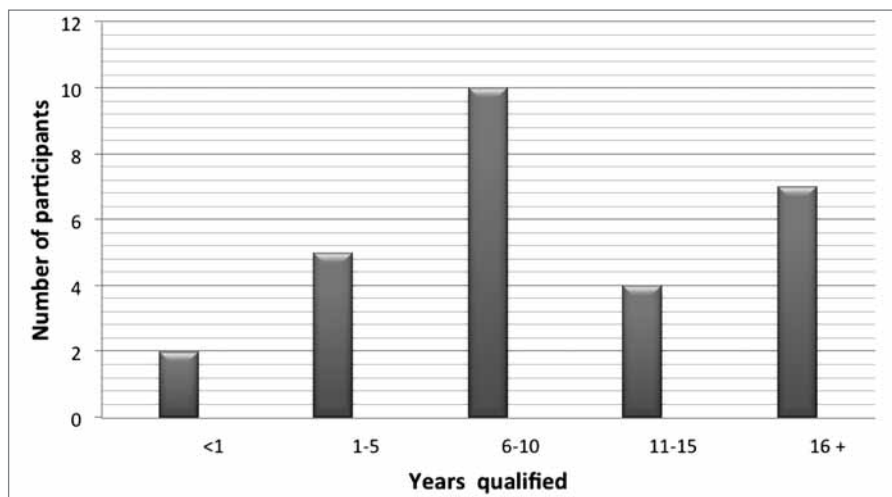
and radiological technicians. The latter complete a 3 year certificate programme in radiography accredited by the Ghana Health Service. The radiographers in this study had varying levels of radiography education. Seventeen of the participants were technicians, nine had a Bachelor's degree and two had a Master's degree in radiography. Seventeen of the 28 participating hospitals were staffed by ra-

Table 4: Categories and themes of radiographers' experiences on the status of QA and radiation protection in their practice setting.

Category	Themes
Contextual concerns / infrastructure	<ul style="list-style-type: none"> • policies • protocols • procedures manuals • management structure • resourcing • staffing and training
Institutional practices	<ul style="list-style-type: none"> • production of radiographs • equipment selection judging of grants • equipment testing and maintenance • equipment quality control • underutilization of some radiographic equipment • technological capacity of some radiographic equipment • reject analysis and dose audit
Perception of patient	<ul style="list-style-type: none"> • patient satisfaction and expectation • patient-staff relations • delays in examinations • lack of information/records • environment/waiting areas
Experience of radiographers	<ul style="list-style-type: none"> • lack of motivation • low remuneration • lack of avenues for CPD • lack of career progression
Implications	<ul style="list-style-type: none"> • impact of patient treatment, • financial implication • professionalism and responsibilities
Solution and the way forward	<ul style="list-style-type: none"> • institutionalization of QA • establishment of QA committee • review of staff training curriculum

ranged from one to five. None of the hospitals surveyed had an implemented QA programme, QA committee or QC test protocols and only one facility had QC test equipment which was never used. Routine QC testing was not performed on the x-ray machines at any of the facilities. The Radiation Protection Board of the Ghana Atomic Energy Commission occasionally carries out some QC tests as part of their regulatory duties but no QC test results were available in any of the departments. Equipment suppliers were only called in for repair works rather than routine maintenance and none of the radiographic staff was involved in carrying out either QC testing or equipment maintenance. QC tests on film processors were occasionally carried out by the equipment suppliers but such claims could not be supported since there were no records available. Records were not available in any of the settings surveyed on equipment maintenance or performance. None of the settings surveyed had training programmes or continuing professional development opportunities for their staff.

Radiographic positioning manuals were not available in any of the settings and only ten hospitals had radiographic exposure charts for staff to refer to. None of the settings had any documented acceptable criteria for diagnostic radiographs. Radiographs were judged subjectively by the radiographer or the technician who produced them and in most cases radiologists were not available to report on the films. During the observation tours it was noted that radiation protection devices, such as lead rubber aprons, were available in all the departments but were often not used by radiographers or radiologists. None of the settings had film reject analysis or patient dose audit programmes in place and the majority of staff had no knowledge or experience of these tools. It was difficult getting updated patient records/patient attendance registers. Film dispatch notebooks were available in all the settings but most were lacking vital information, such as the age and sex of patients, date of the last examination and other relevant information. Available records were hand written and none of the settings had computerized records. The patients' previous radiographs were not available because patients pay for their examinations and therefore keep their radiographs.

**Figure 1: Years of professional experience of the participants.**

diological technicians. The highest grade in the radiographers' category is chief radiographer and at the time of the study, there were only two in the country. There was only one participant at the principal technical officer grade (the highest in the technicians rank) at the time of the study. Table 3 indicates the participants' grades.

In terms of how many items on the checklist were being implemented it was noted that 21 items on QA status monitoring in diagnostic imaging were

observed in the 23 practice settings. In most cases the researcher went through the checklist with the radiographer or technician in charge in the imaging department and where possible documentary evidence was requested. Of the 28 x-ray facilities surveyed, 26 were single room departments. The remaining two had a higher staff complement: three and four radiographers/technicians, respectively. Only four departments had resident radiologists and staff numbers

Overview of the interview experience

Each of the five departmental heads interviewed in this study was able to clearly articulate his/her views on QA and radiation protection in his/her own practice setting. Their comments as well as those of the other participants are presented below in italics.

In each interview, as the participants shared their views on the subject matter, they became bright and expressive as they spoke of their experiences in their profession regarding QA and radiation protection. The demeanour of the interviewees was relaxed and comfortable and they shared their experiences in their practice setting with passion. Participants responded comfortably and spontaneously to the questions. Some participants provided quick answers to the interviewer's questions and developed their responses with little or no probing. Others gave short answers and required probing in order to have them articulate their experiences. One participant was concerned about sharing names of people on audio tape but when the investigator assured him that it was all completely confidential he readily shared his perceptions regarding attitudes towards ensuring quality standards in the practice setting. When one participant had completed the interview and was asked if there was anything else she would like to say, she replied, *"Well, I'd like to thank you and I am sure that whatever you are doing in the end will also help in improving the quality of service we are offering to the public and the government"*.

Analysis of the interview data

Thematic analysis was used to analyse the qualitative interview data. The predominant themes that emerged were:

- the contextual concerns (infrastructure) which addressed policies, protocols, procedure manuals, management structure, resourcing, staffing and training;
 - institutional practice reflecting production of radiographs, equipment selection and judging grants, equipment testing and maintenance, quality control and underutilization of some radiographic equipment, technological capacity of some radiographic equipment, reject analysis and dose audit;
 - perception of patient satisfaction and expectation, patient-staff relationship, delays in examinations, lack of information and records and the environment or patient waiting areas;
 - the experience of radiographers including lack of motivation, low remuneration, lack of avenues for CPD and job progression;
 - implications including impact on patient treatment, cost, professionalism and responsibility; solutions put forward which included institutionalization of quality assurance, establishment of QA committee and review of staff training curriculum.
- Despite the perception differences across the different practice settings there were similarities in the themes that emerged within the narratives. Table 4 illustrates the study categories and main themes in each category.

Contextual concerns/ infrastructure

The context for infrastructure on QA in this study represents a combination of organizational and operational elements which from the radiographers' perspective significantly affect the quality of the imaging service delivery in their setting. All of the interviewees stated the absences of documented policies, protocols and procedure manuals in their setting which may have an adverse effect on the quality of imaging service delivery in their setting. One interviewee described the situation as: *"Government has no policies, no structure concerning the radiological services and therefore no such quality standard...government does not have a body to advice on radiological services"*. Another participant corroborated this view by stating that: *"There is no such standard for radiographic quality in my department"*.

The absence of positioning manuals and exposure charts was also emphasised by the interviewees. In answering a question on this issue, a participant argued that *"... we don't have anything available. We don't have protocols for the department. We don't have information cards even for the patients. We don't have manuals for anything that we do in the department"* and suggested that *"... maybe, it's time we got organized"*.

Another theme that developed in this context was a lack of organized quality

management structures in all the practice settings. A participant attributed her department's inability to provide quality service to the public by asserting that *"Because we don't have any organized structure, it makes it difficult to carry out some of these things that to my mind need to be done"*. Another interviewee regarded the lack of organized structure as his department's weakness by saying: *"... The fact that we don't have established quality standards and quality control for the department is also a weakness ... there is no organized committee that you can refer things to and you can imagine what happens in this our set-up"*.

Staff development was also strongly raised with a participant putting it in the following way: *"... Continuing professional development isn't an organized thing we do here, it is an ad hoc sort ... but I believe that when people qualify there should be continuing professional development"*.

Institutional practice

Issues concerning institutional practices were raised forcefully. Areas such as establishment of quality standards for the production of quality radiographs and standards for equipment selection, testing and maintenance were raised by all interviewees. The following statements are representative of these concerns:

- *"... government does not have a technical team advising on the procurement of equipment and accessories"*,
- *"After installation, most of the equipment is not accepted; I mean acceptance testing is not carried out on most of the equipment. What we find is that a user is just trained on the equipment and then is left to his fate"*,
- *"... And because the equipment are bought without a maintenance agreement, when an equipment breaks down, you know, there is no check-up, there is no quality control test carried"*,
- *"... some contracts often come without after-sales maintenance contract ..."*,
- *"... There is no organized committee that you can refer these things to and you can imagine what happens in this our set-up. It could take months before something is done to this breakdown equip-*

ment and so the public is then deprived of the service not to talk about quality”.

Equipment quality control was raised as a problem in almost all the practice settings. One participant complained about underutilization of some radiographic equipment and absence of reject analysis and dose audit by asserting that: *“In the area of orthopaedics for example because the equipment we have is not orthopaedic friendly, it becomes difficult for us to produce certain projections, so to them we are not offering quality services but it is not because you the radiographer do not know what to do but because the equipment you are using does not allow you to produce that particular radiograph”.*

It also came to light that regular audit in terms of reject analysis and patient dose was not part of the institutional practice of the settings in the study. A participant responded: *“... We don't carry out reject analysis...we don't evaluate the film we reject and there are no plans for quality control measures since there is no structure”* and suggested that *“... quality is not consistent in the department”.*

In a probe to a question on the possible effect of the lack of quality operational standards, a participant responded *“... we are compromising quality in order to produce something with what we have...we are compromising radiation protection”.*

Another key issue under institutional practice was acquisition of processing chemicals. This was expressed in the following ways:

- *“... And also government has central medical stores where all government hospitals are supposed to buy their films, chemicals and other consumables”*
- *“... There are no organized body to do the testing of the consumables, the films and chemicals when they get to the store”*
- *“... The issues of chemicals and films are the major challenges facing not only the department alone but also the service as a whole in the country”.*

Perception of patients

Issues on the public perception on the quality of imaging services were highlighted by most of the interviewees. Themes under this category include: patient satisfaction and expectation,

patient-staff relationship, concern about delays in examinations, lack of information and record keeping and uncomfortable clinical environment especially the patient waiting areas in the settings. The following responses are indicative of such perceptions: *“... And I also think that sometimes the patients are worried about the time spent in the department and our waiting rooms...”*; *“... Our waiting rooms lack decent sitting chairs and there are no television set or literatures for the patients to entertain themselves whilst waiting for their examinations”.* A participant was of the view that the department where she is employed was not meeting public expectation in terms of quality diagnostic service delivery due to frequent breakdown of the equipment in her setting by emphasizing that *“... due to the frequent breakdown of our equipment we are not able to meet their expectation since some examinations have to be deferred a couple of times or reappointed”.*

Experience of radiographers

Lack of motivation, low remuneration, and lack of avenues of CPD and career progression were the key themes highlighted under this category. Participants supported their claims with statements such as:

- *“... We are not well motivated in terms of reward that we get from our services, we are not even praised, and we are not even acknowledged”*
- *“Until recently, there were no local avenues for career development or self-improvement in radiography...”*
- *“We don't have libraries where we can access books and knowledge, no journals, no periodicals and so it's difficult for staff to advance in the profession...”*

Implications

The implications of the lack of adequate quality standards in the practice settings included in the study were under the following themes: impact on patient treatment, financial implication and professionalism and responsibilities. Participants used statements like, *“... we are compromising quality in order to produce something with what we have”* ... *“We are compromising radiation protection and risking the patients' life”*, and *“... the department may be losing money through our inability to carry out audits like reject analysis”* to support the claims.

Solutions

The participants also put forward some immediate solutions which in their view could help improve the quality of the service delivery in their settings. Most of the interviewees agreed that implementation of QA programmes would be useful to their settings. A participant stated *“I will say immediately, we need quality assurance programmes running”.* Another participant proposed that *“we should be thinking of coming out with committees to look at policies, structures and standards for the radiological services but the major one is the QA one ... and then we should look at staff development”.*

The majority of the interviewees were of the view that basic radiographic QC should be included in the curriculum of the School of Allied Health Sciences, University of Ghana. This is the only institution currently training radiographers in Ghana. Examples of the participants' opinions regarding this matter include: *“... we will have to do some basic quality control tests as part of post-qualification professional development so that the people will be up to the standard that if they had equipment, accessories, films and chemicals, wherever they are, they would be able to carry out quality control test to enhance the quality of the work that they are doing, as far as radiographs are concerned and I believe that will even prolong the life of the equipment that we are using”* and *“it is very important that we have an organized continuing professional development as part of post qualification training and basis for promotion”.*

Discussion

Most of the findings from the observational study were confirmed by the departmental heads' interviews. The absence of operational tools like protocols, procedure manuals and exposure charts could have severe consequences on the radiation protection status of the practice settings involved in the study. The absence of formal organizational structures for diagnostic imaging in Ghana does not promote quality service delivery due to the lack of supervision and monitoring of quality. The lack of basic auditing processes, such as reject analysis, in all the departments has financial implications as there was clear evidence of wasted films. The adoption of proper radiation protection measures of patients in particular and the staff in general to minimise unnecessary radiation is vital. Radiation

protection devices were available in all the departments yet they were not always used when required. Appropriate training in the use of protective devices is essential and needs to be made a training priority. However, without a proper organized management structure in most of the departments, compliance by staff would be difficult to enforce. The high level of illiteracy among the population in Ghana and subsequent lack of awareness of the dangers of radiation probably exacerbate the situation and contribute to the lack of staff incentives to use radiation protection devices. If there is no legal obligation to apply radiation protection, and the public

are generally unaware of the hazards and do not complain, then this unacceptable situation will continue. Since there are no radiologists in most of the departments, the establishment of quality criteria is difficult as their role in the development of quality standard criteria is important. However, this is still entirely possible with radiographers taking the lead and initiative to develop and apply image criteria.

Conclusion

The study identified a lack of QA systems in all the practice settings as a major obstacle in the provision and improvement

of quality diagnostic imaging services in the hospitals involved in the study. Some key issues raised, such as the lack of records on patient dose, the quality of images produced in the departments and film reject analysis needs to be investigated quantitatively.

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THE SOCIETY OF RADIOGRAPHERS OF SOUTH AFRICA CODE OF CONDUCT

Every member is required

- to act in the best interests of SORSA
- to take cognizance of the vision and mission of SORSA
- to strive to contribute to the betterment of SORSA and the profession of radiography
- to respect the opinions of others
- to respect the rights of the minority
- to treat all individuals and groups in an impartial, fair and just manner
- to declare a conflict of interest when debating an issue or making a recommendation
- to conduct the affairs of the SORSA in accordance with its constitution and policies
- to confine debates to the merits of an item under discussion
- to use a courteous tone and avoid injecting a personal note in a debate
- to never attack or make allusion to motives of other members
- to never speak or create a disturbance when another member who has the right to the floor is speaking
- to abide by the majority vote of the assembly to ensure unity and order
- to not take discussions outside meetings but instead refer to minutes of such meetings