Study on the performance of Recommended standards in the Diagnostic Radiology Units of the Hospitals Affiliated to the Mazandaran university of Medical sciences

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Summary

Background and purpose:

Providing health care of is the basic right of people (1). Diagnostic radiology is one of the main procedure in health care service the proper benefiting from this technology is brought only under well planning and management(1).

Supervision of the available condition and its comparison with the recommended standards is a key role in assessing assurance from the benefit of these instruments (2). Radiology units of the each hospital (3). Data show that more than 80% of patients referring to hospital need radiology image (3).Improper service causes repetition and even wrong diagnosis, as a results threatening health of the patients (3) lack of protective barrier leads to the exposure of the staff to X- ray which is carcinogen (4). It happens that the instruments are not working properly, like of symmetry in x ray field, defects in collimators, lack of adjusting ray field and x ray, also disorder in developing machine, lack of proper protective barrier, using low quality film and using drugs lack of protective barrier for children, all of which cause severe hazardous for the patients and staff (4). The aim of cleaving medical services to the public is to provide them their needs which are very important .The sensitivity of such services is to such are extent that in case of lock of care, the hazardous in too high. In evaluation of health services the first thing is to evaluate the device used. Methods, efficiency, profits and their combination for prevention eradication of diseases. There fore to gain this goal, it is necessary the obtained results be compared with recommended standards. Purpose of this study was to study the conditions of radiology units and compare with the standards of ICRU NCRP and ICRP. Since radiology Unit is the most expensive for its instruments, manpower and space provided. In a study conducted in 51centers to radiology staff, radiography room, protective barrier, ray leakage was 89%, 82%, 77% and 37% respectively it was found that the conditions of such centers for the view point of protective barriers. Is very unsuitable due to unawareness of the available lockage. (23).Considering the mentioned necessities, in this study, the condition of radiography centers affiliated to the Mazandaran University of Medical Sciences was studied for the type and the rate of problem, in order to provide a proper solving method.

Keywords: ***Diagnostic radiology, Dosimeter, Radiology standards, Protective barrier, ionized ray.***

Materials and methods:

In this study the conditions of the radiography units were compared with the standards. The variables under study were categorized in 6 groups.

Radiography room for space, light ray lockage, height and condition and piece of pass cast ventilation, entry door, alarming pester, ray signal preserving devices loud speaker minimum distance of tube from control room and patient's lavatory condition.

Condition of radiography instruments like, model and installation date, function of mA. KV. Key and time of key moving in different direction of tubes. Bottoms of instrument rotation, film tray, key function, condition of tube arm and s copy condition.

Condition of control room for, size , situation towards radiography room light , size of leaf glass, height of the lead glass from the floor , situation of lead glass tabards x-ray room and control room hygiene .

Condition of dark room for entry door , space place and distance to radiography room light leakage , internal decoration foe reflection of light, ventilation (power and light resistant) bulb (type lf filter distance from film, bulb power) , film box (earth wire), charge of drug, needed light, den eloping device (type and duration of using) of developing device condition of rollers , condition installation position of instrument blank films and drags storage for light , ventilation and humidity .

Condition of the other using rooms for, Patients Preparing room, waiting room hygiene, staff room (space, facilities and hygiene) staff's lavatory (place, hygiene and space) Hilling room and personal, classification of films.

In this study by referring to the radiography units and through observation questioning examination and performance the required data were collected in questionnaire comprising questions based on radiology standard and protection against ray. Detective dose meter model of FJI was, used which can detect x and gamma rays in the range of 50 kev- 103 kev with energy response of 40-80% meanwhile an accurate thermometer with measuring range -10C to 150C and accuracy of +1C used for the determination of developing chemicals and films temperature.

A meter was used to measure the space of radiography and control rooms, height of pass cast, size of lead glass, and height of floor to ceiling. Leakage of ray from door when closed was noticed and lead covering of the wall for protection was considered.

Results:

It was found that 76% of the radiology units had direct Scopy problem, of this only 96% of them had shield thyroid – shield gonad lead spectacle and lead cover. Considering the significance of such devices to protect children and adolescents against ray, such condition is very disappointing (20, 21). Regarding the study on the present of alarming signals , it lack poster of irradiation and warning poster for pregnant and only 40% of them had were in good condition on this regard (10,11).

About the control of irradiation for staff it was found that 51% of them had no medical filing system and periodic examination for the staff. Meanwhile 15% of them did not have person in charge of physic health to supervisee and follow issue related to the personal protection can periodic control (11, 12). Investigation showed that 47% of the units under study fore ray leakage, which demands a serious and prompt execution due to the hazardous of ionization. It is noteworthy to mention that, approximately all of such units lack preservative device and necessity hard ware (13, 14). All of the units under study had pass cast , but it was found that 67% of them have lack efficient most of the dark rooms had evident leakage of light , and did not have bulb, in 48% the temperature of developing negative film was not suitable (15,16). In all, considering the performed study 50% have

50%, 50%, 40%, 51% and 51% have problem of alarming signals in dark room , protection against irradiation , for radiology space, having protective shield and results of dosimeter and efficiency of different instrument respectively (18). Each staff could take 13 images per day during the first 6 months of 2002. Generally, considering the results obtained from this evaluation and the repairable defects, need permanent periodic supervision (once in six months) by the expert in order to have better usage of the instrument is necessary.

The obtained results can be divided in two main sections: data from the questionnaire and observation and examinations total number of available instruments in the hospitals under study was so, of which 5 were out of order, they were in use for 1 so 30 years mean duration of 10 years. Results showed that only in 34.4% of the cases there standard see figure (1).

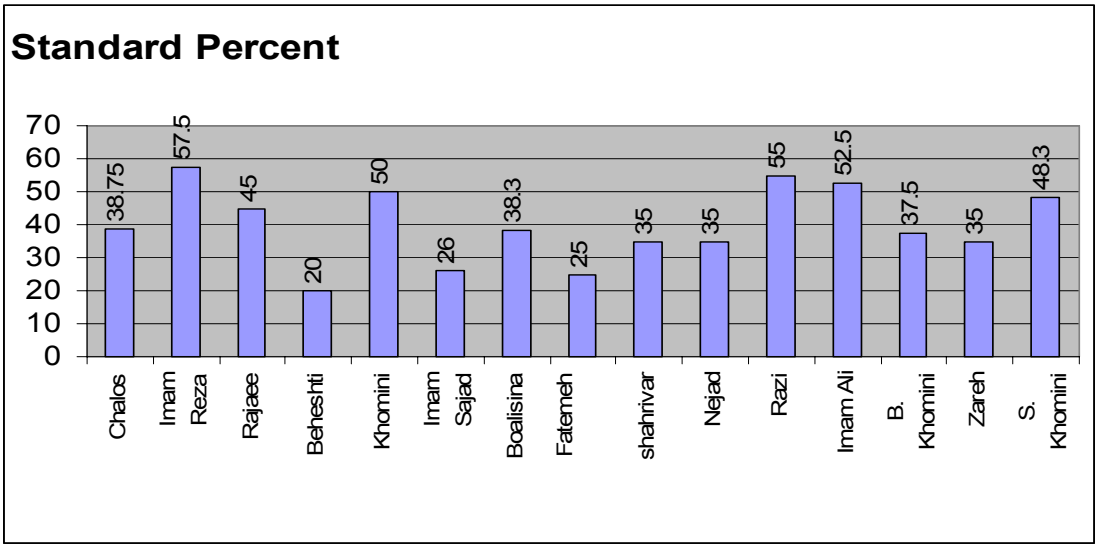

Figure No.1: the condition of radiography room considering the parameters under study in the Mazandaran University of Medical Sciences hospitals.

Study of the radiographic instruments through observation and examination showed that their function as compare to the standard criteria is 80.4%. Figure number2.

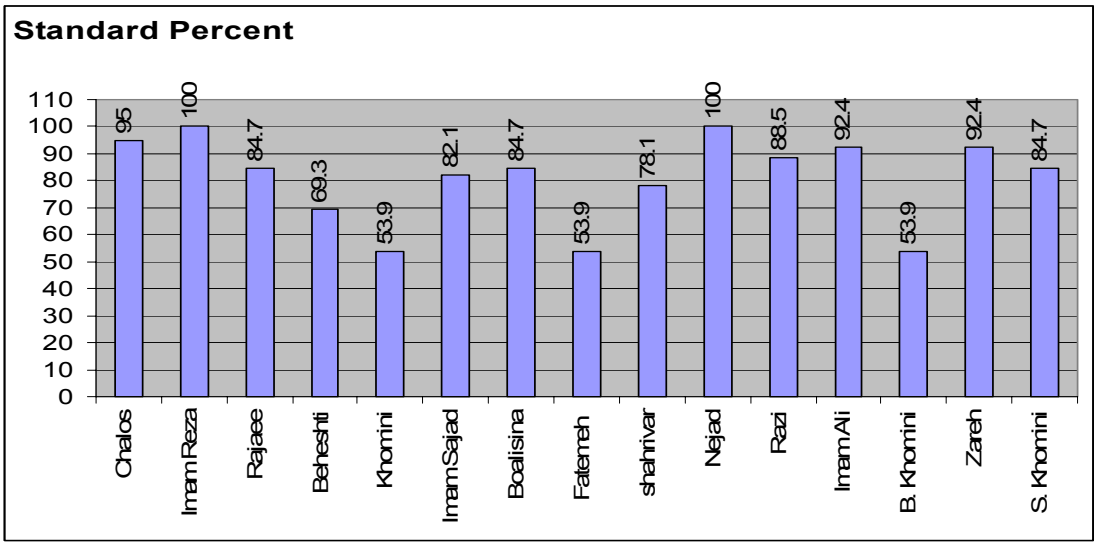

Figure No.2: condition of radiography instruments considering the parameter under study

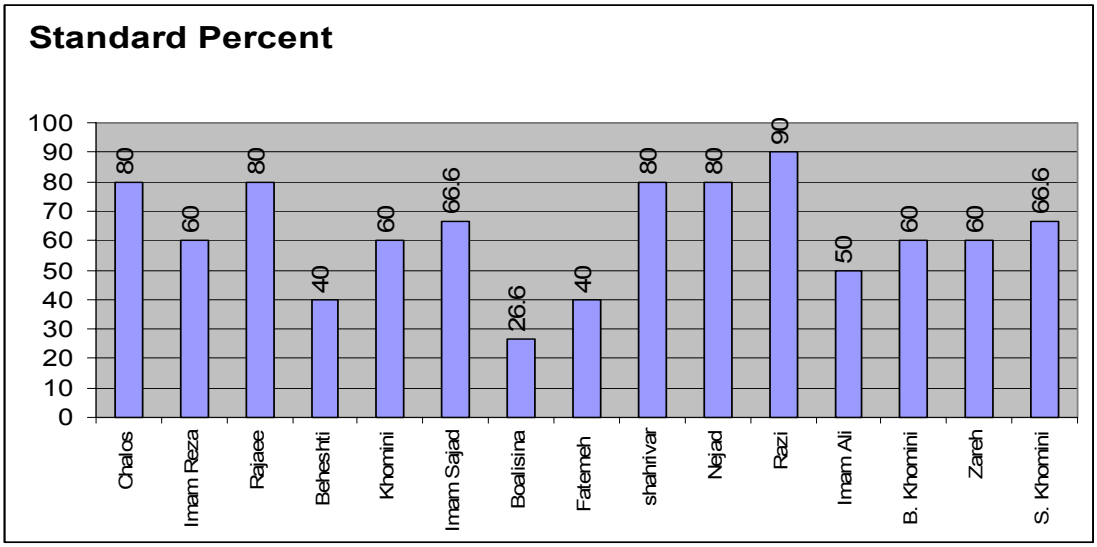

Figure No.3: condition of control room at the radiography units considering the parameter under study.

In study of dark room condition through direct observation and examination showed that. As compare to the standard criteria 48.82% is standard figure number 4.

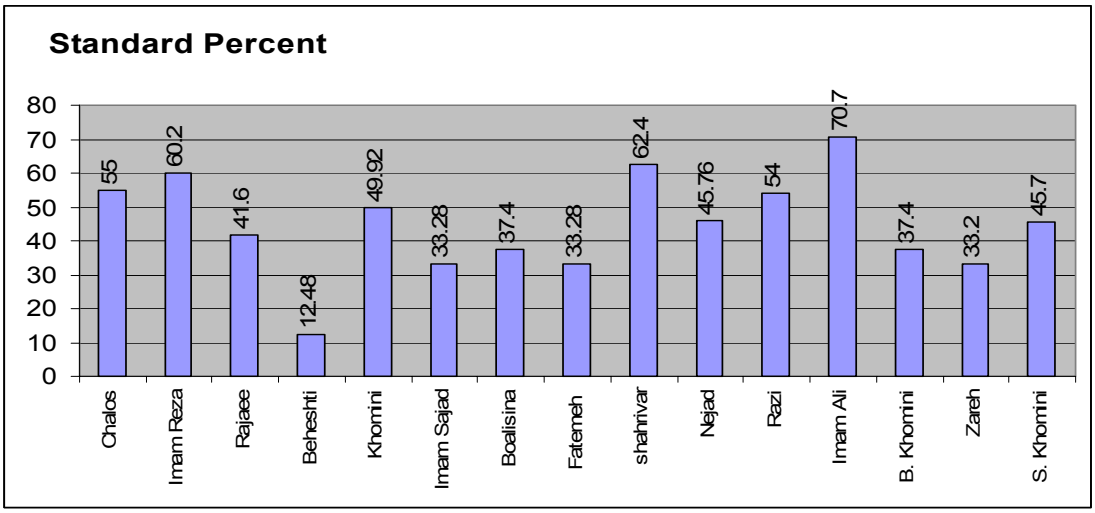

Figure No.4: conditions dark room in the radiography unit considering the parameters under study.

In evaluation of the dosimeter, needed protective barriers and results of dosimeter through direct observation data showed that, about 50.4% standard figure number 5.

In all radiographic units certain fore seeing must be done for the case preparation of the patients, staffroom, film and chemical storage hilling room and waiting halls. Data showed that the conditions of the adjacent rooms 37.15% is standard figure number 6.

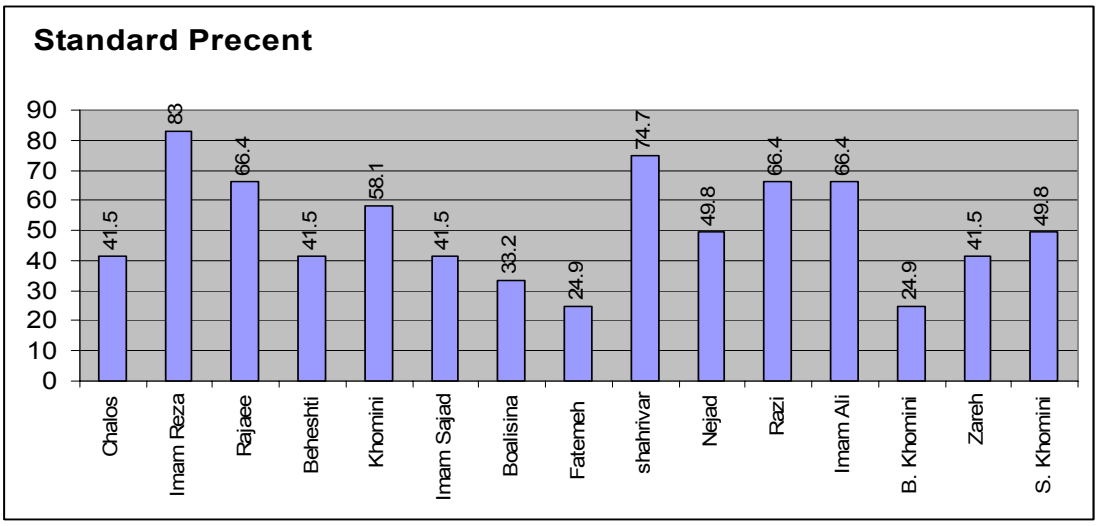

Figure No.5: condition of dosimeter and protection of staff in the radiographic units, considering the parameter under study.

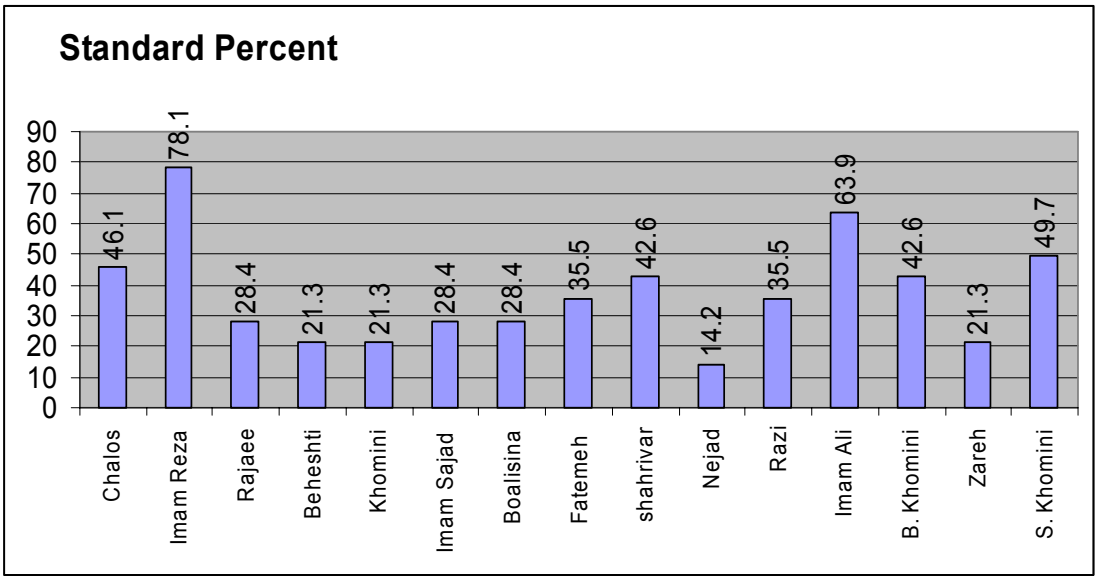

Figure No.6: the condition of adjacent rooms in the radiographic units considering the needle parameter under study (preparation room waiting room staff room, lavatory filing film and chemical storage).

Data indication that, none of the hospitals are supervised regularly, to such as extent that, some of the defects were unknown lit hill the time of this study, and due to unawareness from the consequents they did not feel hazardous.

Discussion:

It was found that 76% of the radiology units had direct Scopy problem, of this only 96% of them had shield thyroid – shield gonad lead spectacle and lead cover. Considering the significance of such devices to protect children and adolescents against ray, such condition is very disappointing (20, 21). Regarding the study on the present of alarming signals , it lack poster of irradiation and warning poster for pregnant and only 40% of them had were in good condition on this regard (10,11).

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Generally, considering the results obtained from this evaluation and the repairable defects, need permanent periodic supervision (once in six months) by the expert in order to have better usage of the instrument is necessary.

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