ORIGINAL ARTICLE

دراسة مستوى معرفة الاصول الأساسية الوقائية في طب الأشعة عند طلاب الطب في جامعة بيرجند للعلوم الطبية

التمهيد و الهدف: بما أنه يوجد ضرر في إستخدام الأشعة في الإستخدام الطبي لذا الإستعمال الغير مناسبت و الغير مطلوب يرفع من المطالب الإحتمالية. إن هدف هذه الدراسة هو متابعة مستوى المعرفة عند طلاب الطب في جامعة بيرجند للعلوم الطبية في مجال أصول الوقاية من الأشعة في عام ١٣٩٤.

الأسلوب: إن هذه الدراسة التوصيفية التحليلية تم إجراء ها على طلاب جميع المراحل و جميع التخصصات في كلية الطب في جامعة بيرجند. و تم تجميع المعلومات عبر أستمارات مؤيدة إحصائيا مشتملة على ٢٠ سوال في ثلاث مجالات : مجال الاصول الاولية الوقائية في إستخدام الأشعة، مستوى التعاون في إجراء صور الأشعة، الجهات العملية الوقائية في التصوير، و كانت الاسئلة ذو اربع أجوبه (جواب صحيح و ثلاث خطا). الجواب الصحيح ذو علامة واحدة و الأجوبة الخطا ذو علامه صفرتم تحليل الإستمارات و المعطيات بواسطة البرنامج الإحصائي، SPSS و اختبارات امان‌كروسكالوالیس و من ويتنيو.

النتائج: كان هناك ١٧٠ شخص ، ٨٨ شخص (٥١.٨٪) في مرحلة استاج، ٥٩ شخص (٣٤.٧٪) طالب مرحله سريريه (٤.١٪) طلاب التخصص في الأشعة، ١٦ شخص (٩.٤٪) طلاب التخصص باقي التخصصات. لم يكن هناك إختلاف ذوقيمة في معدل علامه المعرفة عند الطلاب بين الأناث و الذكور (p>0.05). اشار أختبار من ويتنيو إلى أن معدل علامة المعرفة بشكل عام و في مجالات المبادئ الأولية للوقاية و الجهات العملية الوقائية عند طلاب مرحلة الإستاج بالنسبة لطلاب المراحل الأخرى كانت متدنية بشكل ملحوظ (p>0.05).

الإستنتاج: نظرا الى الدور البارز لمتخصصين طب الأشعة و تدني مستوى المعرفة عند طلاب تخصص الأشعة تجاه مبادئ الأشعة، نؤكد على رفع مستوى التعليم و إجراء إختبارات دورية.

كلمات المفتاح: الإشعاع- راديولوجي- راديوغرافي- المعرفة- الطالب.

ریڈیالوجی کی امیجنگ کے موقع پر سیفٹی کے بنیادی اصولوں سے آگہی۔ بیرجند یونیورسٹی کے میڈیکل طلباء آگہی کا

بیک گراونڈ : لہذا اس کے نامناسب اور بے جا استعمال سے پہنچنے والے ممکنہ نقصانات کا سدباب کرنے کےلئے اس سے حفاظتی اصولوں کا جاننا ضروری ہے ہم نے یہ تحقیق بیرجند میڈیکل یونیورسٹی میں انجام دی ہے تا کہ جان سکیں کہ اس یونیورسٹی کے طلباء ریڈیالوجی کے ممکنہ خطرات سے کس قدر آگاہ ہیں۔

روش: اس تحقیق میں یونیورسٹی کے تما طلباء جیسے ابتدائي، انٹرن، ریڈیا لوجی رزیڈینٹ، اور دیگر شعبوں کے رزیڈینٹ نے شرکت کی۔ یہ تحقیق دوہزار پندرہ سولہ میں انجام پائي ہے۔اس تحقیق کے لئے ایک سوالنامہ استعمال کیا گیا تھا جس میں ریڈیا لوجی کے موقع پر حفاظتی اصولوں کی بات کی گئي تھی۔ یہ سوالنامہ آبجیکٹیو سوالنامہ تھا۔ ڈیٹا کا تجزیہ ایس پی ایس اسی سولہ، کروسکال ویلیس اور مین ویٹنی ٹولز سے کیا گیا۔

نتیجے: اس تحقیق سے پتہ چلتا ہےکہ اٹھاسی افراد ابتدائي طلباء تھے اور انسٹھ افراد انٹرن تھے اور سات افراد کا تعلق ریڈیولوجی زیزڈنشپ تھا جبکہ سولہ افراد دیگر شعبوں سے تعلق رکھتے تھے۔

سفارشات: میڈیکل فیلڈ میں ریڈیو لوجی کے نہایت اہمیت کی وجہ سے یہ ضروری ہے ریڈیو لوجی کے رزیڈنٹ طلباء کی آگہی بڑھانے کے لئے ان کے لئے ورک شاپ رکھی جائیں۔

کلیدی الفاظ: ریڈیولوجی، ریڈیو گرافی، آگہی، ورگ شاپ۔

A Review for Medical Students and Residents of Birjand University of Medical Science Awareness Levels of Basic Principles of Protection in Radiologic Imaging

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Background: Inadequate use of these techniques probably increases the risks of radiography. This study has been accomplished in 2016 to determine medical students and residents of Birjand University of medical science awareness levels of principles of protection in radiologic imaging.

Methods: In this descriptive research, all medical students, including externs, interns, radiology residents and residents of the other fields at Birjand University of medical science in 2016 were targeted. Data was collected with a questionnaire made by the researcher, containing 20 questions in three fields: basic principles of protection in radiology imaging, justification in radiology imaging and applied aspects of protection in radiologic imaging. Justifiability and stability of this questionnaire have been approved. Data is analyzed by SPSS16 program and Kruskal-Wallis test and Mann-Whithney U tests.

Results: 170 people have been targeted in this study, including 88 (51.8%) externs, 59 (34.7%) interns, 7 (4.1%) radiology residents and 16 (9.4%) residents of the other fields. The average score of awareness had no significant difference between male and female students ($p<0.05$). The result of Mann-Whithney U test represents that the total score and the average score for the basic principles and applied aspects for externals compared to interns and residents was too low ($p<0.05$).

Conclusions: As there is an important role for Radiologists and low awareness of radiography basics in radiology residents, we suggest to put more emphasize on teaching and perform more periodic exams in order to increase the level of knowledge in students.

Keywords: Radiance, Radiology, Radiography, Awareness, Student

بررسی میزان آگاهی دانشجویان و دستیاران پزشکی دانشگاه علوم پزشکی بیرجند از اصول پایه حفاظت در تصویربرداری رادیولوژی

زمینه و هدف: این مطالعه با هدف بررسی میزان آگاهی دانشجویان و دستیاران پزشکی دانشگاه علوم پزشکی بیرجند از اصول پایه حفاظت در تصویربرداری رادیولوژی در سال ۱۳۹۴ انجام شده است.

روش:در این مطالعه توصیفی تحلیلی، کلیه دانشجویان پزشکی شاغل به تحصیل در مقاطع استاژر، اینترن، رزیدنت رادیولوژی و رزیدنت سایر رشته‌ها دانشگاه علوم پزشکی بیرجند در سال ۱۳۹۴مورد مطالعه قرار گرفتند. ابزار گردآوری داده‌ها پرسشنامه محقق‌ساخته شامل ۲۰ سؤال در ۳ حیطه اصول پایه حفاظت درتصویربرداری رادیولوژی،توجیه‌پذیری در انجام تصویربرداری رادیولوژی و جنبه‌های کاربردی حفاظت در تصویربرداری رادیولوژی بود. روایی و پایایی این پرسشنامه تأیید شده است.داده‌ها با استفاده از نرم‌افزار آماری SPSS16 و آزمون‌های آماریکروسکال‌والیس و من ویتنی‌یو تجزیه و تحلیل شدند.

یافته‌ها: از ۱۷۰ نفر مورد بررسی، ۸۸ نفر (۵۱/۸٪) استاژر، ۵۹ نفر (۳۴/۷٪) اینترن، ۷ نفر (۴/۱٪) رزیدنت رادیولوژی و ۱۶ نفر (۹/۴٪) رزیدنت سایر رشته‌ها بودند. میانگین نمره آگاهی در دانشجویان مذکر و مؤنث تفاوت معنی‌داری نداشت (p>۰/۰۵). نتایج آزمون من ویتنی‌یو نشان داد که میانگین نمره آگاهی درکل و در حیطه های اصول پایه حفاظت وجنبه‌های کاربردی حفاظت در دانشجویان استاژر نسبت به دانشجویان اینترن ورزیدنت رادیولوژی به طورمعنی داری کمتربود (p<۰/۰۵).

نتیجه‌گیری:باتوجه به نقش کلیدی متخصصین رادیولوژی و پایین بودن سطح آگاهی رزیدنت‌های رادیولوژی از اصول رادیوگرافی، تأکید بیشتر در امر آموزش و برگزاری آزمون‌های ادواری جهت ارتقاء سطح دانش دانشجویان پیشنهاد می‌گردد.

واژه‌های کلیدی: تشعشع، رادیولوژی، رادیوگرافی، آگاهی، دانشجو

INTRODUCTION

Radiologic imaging is an important diagnostic method in healthcare services (1). About 30% to 50% of medical decisions, especially on emergency cases are made upon radiologic findings (2).

It's an inevitable radiologic imaging to diagnose an illness and obtain the progress of it. There is no doubt about the benefits of radiography but still it can be potentially harmful because of ionizing radiations and improper use may increase the probable risks (3).

Contacting ionizing radiations more than admissible amounts can affect the hematologic system, gastrointestinal system, central nervous system, or the whole body finally or may affect the second generation (4).

Applying protection measures are necessary for using of ionizing radiations. These measures can help to capture diagnostic pictures with a higher resolution, besides, both patients and workers, will receive lower amounts of the ray. Recently, new instructions about radiation protection during radiologic work up had been published by international commissions such as ICRP and IAEA (5, 6). Since radiology technologists have a critical role in applying protection measures, they're directly involved in processing, radiology examinations so they need to be aware of instructions to help reduce the radiation dose and they also need to have a great vision and function to decrease the risks to the least.

We can precise more in using devices and reduce attrition when we know about physical points of radiology such as potency and tube's heat capacity and also we need to have information about radiography artifacts such as distortion, magnification, noises and etc.

Ionizing radiation is one of the most harmful agents in workplaces which can have serious and incurable effects on people who work with these radiations or people who refer to radiology ward for diagnosis and treatment (7).

With a proper and justified use of personal protection devices and following rules and instructions on protecting the buildings which contain generators or ionizing rays source, these damages could be avoided. Therefore, radiology workers awareness of these instructions could have an important role in radiological protection (8). So radiology residents would need to be gratefully taught about radiological protection and care about precautions while doing radiology examinations (9).

Because of the importance of radiation protection principles, this study has been accomplished in 2016 to determine medical students and residents of Birjand University of medical science awareness of the principles of protection in radiologic imaging.

METHODS

In this descriptive study, all medical students, including external, interns, radiology residents and residents of other fields in 2016 at Birjand University of medical science were targeted. After explaining the goal of study and encouraging people to answer carefully and emphasizing on this fact that there is no need to mention their personal information, the questionnaire evaluation of awareness of protection principles made by the researcher was answered by people.

Data was collected by the questionnaire made by the researcher containing20 questions in three fields: basic principles of protection in radiology imaging (10 questions), justification in radiology imaging (5 questions), and applied aspects of protection in radiology imaging (5questions). The questionnaire was designed with multiple choice questions with a correct choice and three incorrect choices, each correct answer had 1 point and each incorrect answer had 0 points. Summation of points in each field is assumed as the score of that field. Justifiability of this questionnaire was approved by skillful professors and to realize the stability of the questionnaire, 20 radiology students were examined by the questionnaire in test-retest method and coefficient of correlation between the scores was 0.87.

Data was analyzed by statistic program SPSS16. first it was checked by Kolmogorov-Smirnov test to configure normal distribution. Since there wasn't normal distribution, we used chi-square, Kruskal-Wallis test and Mann-Whithney U tests at a significance level of 0.05.

RESULTS

170 people had been targeted in this study, including 88 (51.8%) externs, 59 (34.7%) interns, 7 (4.1%) radiology residents and 16 (9.4%) residents of the other fields. 45 externs (51.1%), 31interns (52.5%), 4 radiology residents (57.1%) and 9 residents of other fields (56.3%) were female (p=0. 98).

The average score of awareness was 8.82±2.70 and in three fields of basic principles of protection, justification and applied aspects of protection, the average score was 3.63±1.49, 2.54±1.15 and 1.68±1.03 in a sequence. There was no significant difference between male and female in the average score of awareness and all three fields (p>0.05) (Table1).

Table 1. The average score of awareness and scores of three fields in male students compared to female students

Sex	Male(n-81)	Female(n-89)	P value related to independent t test
Variant	Mean ± SD	Mean ± SD	
Basic principles of protection	1.45±3.84	1.51±3.44	0.11
Justification	1.19±2.48	1.10±2.60	0.54
applied aspects of protection	1.05±1.85	1.00±1.53	0.07
Awareness in total	2.69±9.04	2.72±8.62	0.39

Table 2. Comparison between four groups for the average of total score of awareness and in three fields by separation

Group	Extern	Intern	Radiology resident	Resident of other fields	p-value related to cr„
Variant	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	
Basic principles of protection	1.38±3.32	1.57±3.90	1.13±4.57	1.61±3.94	0.02
Justification	1.08±2.40	1.18±2.53	1.07±3.14	1.26±3.13	0.07
applied aspects of protection	0.97±1.45	1.03±1.90	1.25±2.71	0.95±1.69	0.007
Awareness in total	2.70±8.08	2.54±9.63	2.04±10.14	2.54±9.31	0.002

The Kruskal-Wallis test showed no significant difference in the average score of justification in radiography between all groups (p=0. 07) but there was a significant difference between groups for the average of the total score and the score of basic principles of protection and applied aspects of protection (p<0.05). The result of Mann-Whithney U test represents that total score and the average score for basic principles and practical aspects for externals compared to interns and residents is too low (p<0.05) but there was no significant difference between other groups (Table2).

DISCUSSION

In this study, the average score of awareness in total was 8.82 ± 2.70 (from a total score of 20) and the average scores in each field were1. 49 ±3. 63 (from a total score of 10) four basic principles of protection, 2.54 ± 1.15 (from a total score of 5) for justification and 1.68 ± 1.03 (from a total score of5) which show poor awareness for people in study groups. Fattahi ASL et al had a study on radiology workers' occupational skills and their score for information about radiology specific sciences was 65.5 percent and more than the medium level which showed their information is in a good status (10).

In Saberi et al study radiology workers information about radiology science was in a medium level with a maximum score of 67.9 in physics lesson and a minimum score of 60.3 in radiobiology lesson (11).

Su et al study results about the review on radiological protection awareness in 114 radiological technologists in five medical centers in Taiwan configured that the average score of technologists' awareness is 65.83% (12).

A study was accomplished by Shah et al which checked 41 technologists' awareness levels of radiological protection in three hospitals and there was an average score of 75% for radiological protection (13).

In Chaparian et al study, the average score of awareness in radiographers in Yazd was 46.50 ± 5.30 (14). the average score of awareness in radiographers and staff targeted in _____

Abbas Nezhad Jahan Abad (2016) study was 42.36 (15) that person's awareness in these two last studies and our research wasn't in a good status compared to Fattahi ASL et al study (10), Saberi et al study (11), Su et al study (12) and Shah et al study (13). As we don't have the complete list of questions in those studies, we can compare awareness only by the total score reported. The average score of awareness had no significant difference between male and female (p<0.05) but the average of the total score and the average score for basic principles and applied aspects for externs compared to interns and residents was significantly low (p<0.05).

In Chaparian et al study no significant relation between workers sex and awareness of radiological protection was found (p>0.05) but there was a significant difference between workers' awareness with different educational degrees (p=0. 04). In other words, people with higher degrees have more awareness of radiological protection which is similar to our findings.

Fattahi ASL et al study configured a significant difference (p<0.05) between female workers and male workers with higher awareness for female workers. Also, there was more awareness for radiology technicians compared to radiology experts, but no significant difference in statistics, which is not similar to our findings. As there is a critical role for radiologists and low awareness for radiology residents, with short term workshops for students, we can improve their knowledge and encourage them to use up to date information and repair their awareness status.

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