



A Study Based on Perception towards the Radiation Exposure to Adult Patients at King Abdul-Aziz Medical City, Riyadh, Saudi Arabia

**Ali Aldhebaib^{1*}, Oinam Gokulchandra Singh¹, Ziad Almutlaq¹,
Abdulrahman Alaqeel¹, Rakan Saleh M. Alkhalifah¹,
Turki Nasser I. Alnasser¹, Fahad Falah M. Alharbi¹
and Faisal Hisham A. Alshaalan¹**

¹Radiological Sciences Program, College of Applied Medical Sciences (COAMS), King Saud Bin Abdulaziz University for Health Sciences (KSAU-HS), King Abdul Aziz Medical City (KAMC), King Abdullah International Medical Research Centre (KAIMRC), National Guard Health Affairs (NGHA), Riyadh, Kingdom of Saudi Arabia.

Authors' contributions

This work was carried out in collaboration between all authors. Authors AA and OGS designed the study, performed the statistical analysis, wrote the protocol, wrote the first draft of the manuscript and responsible to correspond with the journal. Authors ZA, ARA, RSMA and TNIA managed the analyses of the study, data collection and assisted in data management. Authors FFMA and FHAA managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI:10.9734/JAMMR/2018/41907

Editor(s):

(1) Fatima Mubarak, Department of Radiology, Aga Khan University, Karachi, Pakistan.

Reviewers:

(1) Sainudeen Pattazhy, S. N. College, University of Kerala, India.

(2) Mohammed Sidi, Aminu Kano Teaching Hospital, Nigeria.

Complete Peer review History: <http://www.sciedomain.org/review-history/25000>

Original Research Article

Received 20th March 2018

Accepted 28th May 2018

Published 6th June 2018

ABSTRACT

Background: Radiologic diagnostic procedures using ionizing radiation carry potential health risks to the patients. So, patient's knowledge about ionizing radiation would play a key role in reducing unnecessary imaging and its impacts.

Aims: To investigate patient's perception of ionizing radiation and its associated risks towards the radiation exposure to the adult patient.

*Corresponding author: E-mail: dhebaiba@ksau-hs.edu.sa;

Materials and Methods: We included 204 adult patients (175 males and 29 females; age range 18- 51 or above and suitably structured questionnaire was used. A cross-sectional survey was conducted, using a suitably structured questionnaire consisting of 16 questions divided into multiple parts. Descriptive statistics were used to explain the demographic characteristics and information regarding radiation knowledge of the respondents. This study was conducted at King Abdulaziz Medical City, Riyadh, Saudi Arabia in the Radiology Department between October and January 2017.

Results: A total of 204 patients responded to this study. It is clarified that there were (85.8.3%) male and (55.4%) female, their age's ranges between 18 to 51 years and above, and educational level ranges from less than higher secondary to Ph.D. level Furthermore, we found that the number of the respondents was agreed with questions. It was a surprising result that the majority of respondents did not know about the imaging modalities that do not use ionizing radiation. In addition, the large numbers of undecided and disagree responses (41.7% and 33.3%) for the exposure to radiation when you are during travel by airplane along with 59 respondents were given "No" answer for the source of their information and they did ask their physician about radiation risks prior to X-ray examinations.

Conclusion: It is clear from the study that most of the patients have a good knowledge and recognized a correlation between ionizing radiation and its associated risks. In the conclusion, similar studies with a large sample size may be required to order to get enough empirical data about the radiation knowledge of the patients.

Keywords: Ionizing radiation; radiation protection; biological effects; imaging modalities.

1. INTRODUCTION

Medical imaging is considered to be one of the major tools on which the whole medical field depends. Medical imaging is considered the "eyes" of medicine, providing an inside look at a patient's anatomy to help physicians provide appropriate care and without medical imaging, it would be difficult to diagnose and treat the patient. As medical imaging techniques improve, the accuracy and efficiency of the patient's treatment plan will increase. There are many modalities in medical imaging including X-ray, fluoroscopy, magnetic resonance imaging (MRI), computed tomography (CT), ultrasound, angiography, and nuclear medicine. These modalities may be applied for diagnosis and treatment. For example, radiotherapy can be used to treat some types of cancers. [1-4] The major concern associated with medical imaging is ionizing radiation. It is necessary to first assess the patient's level of knowledge regarding medical exposure to garner information. Furthermore, exposure to ionizing radiation, particularly at high doses, is usually linked with acute and chronic diseases. [5]

Due to the importance of ionizing radiation, many studies have been performed to investigate the knowledge and awareness of the public and in particular of patients. According to some studies, risks differ depending on the source of ionizing radiation. [6-11] According to a US study

conducted in 2009 the use of ionizing radiation had increased more than seven times since the 1980s. [12] Moreover, some studies indicated that the general population is not worried about ionizing radiation due to the belief that health care professionals can reduce the risks based on their training. [13-15] Therefore, education and training of healthcare professionals are as important as patient awareness.

According to a 20-question survey conducted at the University of Vermont to estimate and rate perceptions and awareness of the public, a higher level of education was associated with increased awareness and understanding of ionizing radiation. [16] In another study of 500 adult patients at two emergency departments, it was found that 14.1% of respondents understood the principle of radiation exposure of CT scanning compared to the number of respondent s who understood the principle of exposure to X-rays. In addition, 25.6% of patients believed that repeated abdominal CT procedures can increase the risk of developing cancer. Of note, a significant majority of patients answered all questions incorrectly. [17] In another study, patients were questioned about the source they were depending on to improve and correct their information about radiation and its risks. Furthermore, it was found that doctors were the source of information for 51% of patients. [18-21] Small numbers of resources are available for use in the context of analyzing radiation risk and

weighing this up in terms of benefit and risk from the radiological examination [22-25].

The purpose of this research was to investigate the knowledge and awareness of radiation exposure in adult patients at King Abdul-Aziz Medical City (KAMC), Riyadh, Saudi Arabia. Hence, patient's knowledge about ionizing radiation would play a key role in reducing unnecessary imaging and its impacts. To our knowledge, little research was done in Saudi Arabia to determine the perception of radiation exposure to the adult patient.

2. MATERIALS AND METHODS

This qualitative prospective cross-sectional study included 204 adult patients (calculated by Rao soft online sample size calculator), and a suitably structured questionnaire was used. The sampling technique used stratified random sampling and study was conducted at King Abdul Aziz Medical City, Riyadh Saudi Arabia in the Radiology Department where general X-ray, fluoroscopy, and CT are performed. According to National Guard-Health Affairs data, 14328 subjects had visited the Radiology Department for X-ray, fluoroscopy, and CT per month as from the medical record. The questionnaire was adapted from the previous similar studies (Gemechis Asefa, Wondim Getnet, and TsegayeTewelde, 2016) and (Yurt, Çavuşoğlu, & Günay, 2014). The questionnaire was prepared in English and translated into Arabic language and thereafter back translation was done by other persons to check the consistency. The survey consisted of 16 questions divided into multiple parts. All participants were adult patients above 18 years of age and were willing to provide written informed consent. Patients less than 18 years of age who were not willing to give consent or who were illiterate were excluded from this study. The collected data were entered in Microsoft Excel and transferred to SPSS version 22 for statistical analysis. Descriptive statistics were used to explain the demographic characteristics of the respondents. Frequencies and percentages also were used in order to represent the information regarding knowledge and awareness of the respondents. An appropriate statistical test was used based on the type of variables and the data. The confidentiality of all patients was protected and personal data stored on a computer were accessible only to the researcher. Subject data were coded and patients' names were not be used.

3. RESULTS

Demographic Characteristics: According to our study, the distributed questionnaire amongst the 204 respondents were returned and properly filled. As stated in the Table 1 it is reported that overall 85.8% of the 204 participants were male and 14.2% were female. It is also clarified (that 55.4% of the patients were aged 18 –30 years, 18.6% were 31– 40 years, 16.7% were 41 – 50 years, and 9.3% were ≥51 years. We also found that 66.2% of the respondents were employed, 24.5% were students, 5.4% were housewives, and 3.9% were self-employed. Furthermore, 57.8% of the patients had graduated from college, 31.4% were educated to the school level, 5.4% had a master's degree, 4.9% were educated to the level of less than high school, and 0.5% had completed a Ph.D. degree.

Table 1. Demographic characteristics amongst adult patient visiting King Abdul-Aziz Medical City (n=204), Riyadh, Saudi Arabia, 2017

Variable	Number & percentage
Gender	
Male	175(85.8%)
Female	29 (14.2%)
Age (y)	
18-30 y	113 (55.4%)
31-40 y	38 (18.6%)
41-50 y	34 (16.7%)
51yr or above	19 (9.3%)
Job type	
Employed	135 (66.2%)
Housewife	11 (5.4%)
Self-employed	8 (3.9%)
Student	50 (24.5%)

Knowledge about radiation-related health hazards and referral to radiologic imaging:

The types of radiological examination differed between patients 55.9% had been exposed to X-rays, 33.5% underwent CT, 5.4% had a fluoroscopy examination, and 4.9% underwent angiography.

According to participants' answers about the side effects of ionizing radiation, we found that 77.5% of the patients agreed that radiology can cause harm to the body; 16.1% disagreed and 6.4% were undecided. Furthermore, 63.2% of the sample considered that it is not safe to undergo the radiological procedure during pregnancy, 18.6% considered that it is safe, and 18.1% were undecided.

Based on our study, it is revealed that while traveling by airplane a person could be exposed to radiation, we asked the participants whether they thought they were being exposed to radiation during travel by airplane; 41.7% did not know, 33.3% answered 'no', and 25% answered 'yes'. In addition, 41.1% of the adult patients agreed that they could be exposed to radiation while at home, 31.4% were undecided, and 25.5% disagreed table. Our results showed that 59.3% of the participants do not know which modality does not use ionizing radiation; 25.5% 5.9%, 4.9%, and 4.4% thought that ultrasound, nuclear medicine, X-rays, and CT do not use ionizing radiation respectively.

Similarly, we asked the participants which organ is most sensitive to radiation. We found that 36.3% of them did not know which organ is the

most sensitive; 25% selected reproductive organs, 22.1% eyes, 14.2% heart, and 2.5% lungs, table. In addition, 54.9% of the respondents believed that pediatric patients are more sensitive to radiation than adults, 30.9% did not know, 9.8% considered that pediatric and adult patients are similarly sensitive to radiation, and 4.4% considered that pediatric patients are less sensitive than adults, table. Moreover, we asked whether patients discussed the risks of radiation with their physicians; 71.1% of the sample had not asked their physician about these risks.

Knowledge about protective measures of radiation: Participants were asked if repeated radiological examination may increase the chances of the possible health hazard caused by ionizing radiation. 55.4% of the

Table 2. Knowledge about radiation-related health hazards and referral to radiologic imaging amongst the adult patient visiting in King Abdul-Aziz Medical City (n=204), Riyadh, Saudi Arabia, 2017

Variable	Category	No.	%
Types of radiologic imaging modalities used	Fluoroscopy	11	5.4
	General X-ray	114	55.9
	CT	69	33.8
	Angiography	10	4.9
Ionizing radiation can harm the human body.	Agree	158	77.5
	Undecided	13	6.4
	Disagree	33	16.1
It is safe to undergo X-ray examinations during pregnancy	Agree	38	18.6
	Undecided	37	18.1
	Disagree	129	63.2
You are exposed to radiation during travel by airplane.	Agree	51	25
	Undecided	85	41.7
	Disagree	68	33.3
While at home, you can be exposed to natural background radiation	Agree	88	41.1
	Undecided	64	31.4
	Disagree	52	25.5
Human body organ highly sensitive to Ionizing radiation	Don't know	74	36.3
	Eyes	45	22.1
	Reproductive organs	51	25
	Heart	29	14.2
	Lungs	5	2.5
The sensitivity level of radiation exposure in pediatric compared to adult patients	Don't know	63	30.9
	More than adult	112	54.9
	Same as adult	20	20
	Less than adult	9	9
Have you ever asked your physician about the information of radiation?	Yes	59	9.8
	No	9	4.4
Types of imaging modalities which do not use ionizing radiation?	Don't know	74	36.3
	Ultrasound	45	22.1
	Nuclear medicine	51	25
	Computed tomography	29	14.2
	X-rays	5	2.5

Table 3. Knowledge about protective measures of radiation amongst the adult patient visiting at King Abdul-Aziz Medical City (n=204), Riyadh, Saudi Arabia, 2017

Variable	Category	No.	%
The repeated radiological examination may increase the possible health hazard caused by ionizing radiation.	Agree	113	77.5
	Undecided	60	6.4
	Disagree	33	16.1
Radiological procedures required to remove any metallic objects from the body	Agree	176	86.3
	Undecided	12	5.9
	Disagree	16	7.8
Using protective tools can minimize the possible health hazards caused by radiation to the body	Agree	171	83.3
	Undecided	18	8.8
	Disagree	15	7.4

respondents agreed, 29.4% were undecided, and 15.2% disagreed. We found that 86.3% of the individuals agreed that radiation procedures are required to remove any metallic objects from the body, 7.8% disagreed, and 5.9% were undecided. Moreover, our results showed that patients have concerns about high risks of ionizing radiation; when asked whether the use of protective tools can minimize the possible health hazards caused by the radiation to the body, 83.3% of the respondents agreed, 8.8% were undecided, and 7.4% disagreed.

4. DISCUSSION

In this preliminary descriptive study, awareness was assessed by measures knowledge and understanding in the adult patient towards ionizing radiation visiting the King Abdulaziz Medical City, Riyadh, Saudi Arabia.

A total of 204 patients responded to this study, according to the (Table 1) it is clarified that there were (85.8.3%) male and (55.4%) female, their ages ranged between 18 years and 51 above years, and educational level ranges from less than higher secondary to Ph.D. level.

According to our result, Table (2,3), we found that the number of the participants were agreed with questions The statistical analysis carried out on our survey groups did not show any substantial differences in terms of age, level of education attained, and gender is taken to our questionnaire administration. Additionally, there is influencing factor on protection which means an increase as the educational level are knowledgeable the awareness level goes perfectly. The findings from some studies have suggested that educational level and age might affect patients' knowledge about ionizing radiation. In another study knowledge about any of the health hazards caused by radiation was

defined as 'yes' if participants mentioned any of the following health hazards: infertility, cancer, cataract, decreased life expectancy, genetic/fetal anomalies or hair loss. Furthermore, 63.2% of the sample considered that it is not safe to undergo the radiological procedure during pregnancy, 18.6% considered that it is safe, and 18.1% were undecided. Similarly in another study, 44.6% of the respondents reported that radiological examinations are not to be performed on females who are likely to be pregnant [26]. Moreover, knowledge about any of the protective measures for radiation was defined as 'yes' if participants were able to mention any of the following protective measures [27]. It was a surprising result that the majority of respondents did not know about the imaging modalities that do not use ionizing radiation, t. In addition, the large numbers of undecided and disagree responses (41.7% and 33.3%) for the exposure to radiation when you are during travel by airplane. Furthermore, only 59 of 204 participants were given "No" answer for a source of their information and they did ask their physician about radiation risks prior to X-ray examinations. Considering as more than half (71.1%) of the responders said that the doctor was not the source of their information and they did not ask their physician about radiation risks. Another data suggested that patients undergoing non-urgent CT and cardiac SPECT wish to be informed of imaging risks but have limited knowledge and understanding of radiation dose or associated health risks. One-third of patients were unaware they would be exposed to radiation, and those who were aware substantially underestimated the relative dose [28]. Further, the inclusion of radiation information regulations about the effective communication to get properly informs the patients. In this regard, our survey indicates that there is a significant gap in communication between physician and patients and there is a

need to address this deficiency. Similar to another study, it is said that most of the patients did not receive the radiation awareness information upon examination, which reflected the low level of general radiation knowledge in most hospitals [29].

A Survey of Public Perception, Concerns and Awareness of Medical Radiation" by "L. Markowsky, A. Peduto. A total of 95 patients completed their survey and majority of patients (57%) were male, just over half (51%) were between the ages of 50 and 69 years, and 54% were educated to higher than secondary level. Moreover, 55% of patients stated that they were given no information about the risks of radiation, 30% felt that there is no increased cancer risk with CT scans, and 46% believed that only one scan has no impact on cancer risk. The authors also found that the doctor was the source of their patients' information for 51% of respondents. News, television, friends, and the internet were less common sources of information. Overall, 55% of patients stated they were given no information about the risks of radiation. Finally, they asked their respondents to assess the amount of radiation associated with different imaging modalities and found that 3% felt there was no radiation with x-rays, 32% felt CT scans are associated with no or very small amounts of radiation, 15% considered that MRIs are associated with moderate to large amounts of radiation, and 28% recognized that ultrasound does not involve radiation [30].

There are some similarities and some inconsistencies between our results and those of L. Markowsky, A. Peduto. Overall 204 respondents completed our study compared to 94 respondents in their study. Thus, the outcome of our study is likely to be more accurate in case if we conduct the similar studies in larger sample size. In addition, our results were mostly obtained from younger respondents between the ages of 18 and 30 years; by contrast, the participants in the study by L. Markowsky, A. Peduto were older (50–69 years), contrarily their results tend to be less accurate compared to this study. Moreover, Markowsky and Peduto showed that 51% of their respondents had a desire to know about the radiation risks by asking their physician [30].

5. CONCLUSION

Based on our study, the finding demonstrated that the level of awareness and knowledge of

ionizing radiation amongst the patients who had come to medical imaging department at King Abdulaziz Medical City for performing several radiological examinations are of relevance except in the few of the question. However, the protection is in a linear relationship with general awareness & knowledge, about radiation doses and knowledge about side effects. It has also been found that most of the patients want to be informed about radiation and its risks. [2,13,14] The purpose of our study was to measure the level of patients' awareness and knowledge about ionizing radiation. Finally, in the conclusion, similar studies with a large sample size may be required to order to get enough empirical data about the awareness and knowledge of ionizing radiation to patient and public. There is a great room for improvement in patient education regarding medical radiation exposure, as well as patient safety education for patients.

CONSENT

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images. See appendix (I).

ETHICAL APPROVAL

See IRB approval appendix (II).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Christodouleas J, P Forrest RD, Ainsley CG, Tochner Z, Hahn SM, Glatstein E. Short-term and long-term health risks of nuclear-power-plant accidents. *The New England Journal of Medicine*. 2011;364:23:34-41.
2. Brenner DJ, Hall EJ. Computed tomography—an increasing source of radiation exposure. *The New England Journal of Medicine*. 2007;357:2277-84.
3. Smith-Bindman R. Is computed tomography safe? *The New England Journal of Medicine*. 2010;363:1-4.
4. Smith-Bindman R, Lipson J, Marcus R. Radiation dose associated with common computed tomography examinations and the associated lifetime attributable risk of

- cancer. Archives of Internal Medicine 2009;169:2078-86.
5. Linet MS, Slovis TL, Miller DL. Cancer risks associated with external radiation from diagnostic imaging procedures, CA—Cancer Journal for Clinicians. 2012;62:10-29.
 6. Kanda R, Tsuji S, Yonehara H. Perceived risk of nuclear power and other risks during the last 25 years in Japan, Health Physics. 2012;102:384-90.
 7. Bethesda Md. Ionizing radiation exposure of the population of the United States, USA: National Council on Radiation Protection & Measurements 2009; 160:97:1-5.
 8. Slovic P. Perception of risk from radiation, Radiation Protection Dosimetry. 1996; 68(3-4):165–180.
 9. Mainous AG III, Hagen MD. Public perceptions of radon risk. The Family Practice Research Journal. 1993;13Ed.
 10. Perko T. Radiation risk perception: A discrepancy between the experts and the general population. Journal of Environmental Radioactivity. 2014;133Ed: 86-91.
 11. Poortinga W, Cox P, Pidgeon NF. The perceived health risks of indoor radon gas and overhead powerlines: A comparative multilevel approach, Risk Analysis. 2008; 28:235-48.
 12. Schauer DA, Linton OW. Ionizing radiation exposure of the population of the United States, medical exposure—are we doing less with more, and is there a role for health physicists? Health Physics 2009; 97:1-5.
 13. Baerlocher MO, Detsky AS. Discussing radiation risks associated with CT scan with patients. The Journal of the American Medical Association. 2010;304 ed.
 14. Fazel R, Krumholz HM, Wang Y. Exposure to low-dose ionizing radiation from medical imaging procedures. The New England Journal of Medicine. 2009;361:849-57.
 15. Arslanoğlu A, Bilgin S, Kubali Z, Ceyhan MN, İlhan MN, Maral I Doctors' and intern doctors' knowledge about patients' ionizing radiation exposure doses during common radiological examinations. Diagnostic and Interventional Radiology. 2007;13:53–55.
 16. Approval of the University of Vermont research protection's office under instructor's assurance, in conjunction with Vermont department of health, diagnostic and interventional radiology. 2008;20Ed.
 17. Baumann BM, Chen EH, Mills AM. Patient perceptions of computed tomographic imaging and their understanding of radiation risk and exposure. Ann Emerg Med. 2011;58:1-7e2.
 18. Brenner DR. Estimating cancer risks from pediatric CT: Going from the qualitative to the quantitative. Pediatric Radiology. 2002; 32:228-1;discussion 242-4.
 19. Domeshek LF, Mukundan S, Yoshizumi T, Marcus JR. Increasing concern regarding computed tomography irradiation in craniofacial surgery. Plastic and Reconstructive Surgery. 2009;123:1313-1320.
 20. Law J, Faulkner K, Young KC. Risk factors for induction of breast cancer by X-rays and their implications for breast screening. British Journal of Radiology 2007;80:261-266.
 21. Stengel D, Frank M, Matthes G, Schmucker U, Seifert J, Mutze S, et al. Primary pan-computed tomography for blunt multiple traumas: Can the whole be better than its parts? Injury-International. Journal of the care of the Injured. 2009;40: 36-46.
 22. Kenneth L, Bontrager, John P, Lampignano. Textbook of Radiographic Positioning and Related Anatomy, 8th ed. Catherine Jackson. 2014;1:57-68.
 23. Rania MA, Afaf MTE, Elsamani M, Wisal BH. Knowledge and performance of radiographers towards radiation protection, Taif, Saudi Arabia. IOSR Journal of dental and medical sciences 2015;14:3:63-68.
 24. Ali Dehghani, Mohammad Ranjbarian, Arash Mohammadi. Radiation safety awareness amongst staff and patients in the hospitals. International Journal of Occupational Hygiene. 2014;6(3):114-119.
 25. Szarmach A, Piskunowicz M, Sweeton D, Mac A, Mockallo G, Dzierzinowsti J, Szurowka E. Radiation safety awareness among medical staff. Polish Journal of Radiology is Provided Here Courtesy of International Scientific Literature. 2015; 80:57-61.
 26. Yurt A, Çavuşoğlu B, Günay T. Evaluation of awareness on radiation protection and knowledge about radiological examinations in healthcare professionals who use ionizing radiation at work. Molecular Imaging Radionucl Therapy.2014;23(2): 48-53.

27. Gemechis Asefa, Wondim Getnet, Tsegaye Tewelde. Knowledge about radiation related health hazards and protective measures among patients waiting for radiologic imaging in Jimma University Hospital, Southwest Ethiopia. *Ethiop J Health Sci.* 2016; 26(3):227–236.
28. Janet M. Busey MS, Laurie A, Soine, Ph.D., ARNP, Jenine R, Yager BA, et al. Patient knowledge and understanding of radiation from diagnostic imaging. *JAMA Intern Med.* 2013;173(3):239-241.
29. Mustafa Alhasan, Mostafa Abdelrahman, HaythamAlewaidat, Yousef Khader. medical radiation knowledge among patients in local hospitals. *Journal of Medical Imaging and Radiation Sciences.* 2015;46:45-49.
30. L. Markowsky A. RANZCR-AOCR 2012 / R-0184 / A Survey of Public Perception, Concerns and Awareness of Medical Radiation - EPOS™; 2018. Available:<http://dx.doi.org/10.1594/ranzcraocr2012/R-0184> (Accessed 29 Apr. 2018)

APPENDIX

Informed Consent (I)
IRB approval (II)
Questionnaires (III)

Kingdom of Saudi Arabia

Ministry of National Guard - Health Affairs



Informed Consent for Cross-Sectional Surveys

إقرار موافقة للمشاركة بدراسة مقطعية

Study Title : A Study Based on Perception towards the Radiation Exposure to Adult Patients at King Abdul-Aziz Medical City, Riyadh, Saudi Arabia

Study No. : SP17/207/R

Principal Investigator : Dr. Ali Aldhebaib

You are requested to participate in research that will be supervised by (Dr. Ali Aldhebaib) in (Riyadh, Saudi Arabia).

أنت مدعو للانضمام طوعاً لدراسة بحثية سوف يشرف عليها (علي الضبيبي) في (الرياض المملكة العربية السعودية)

This study is about (Perception of radiation exposure in adult patients at King Abdul-Aziz Medical City, Riyadh, Saudi Arabia

هذه الدراسة تهدف إلى تصور التعرض للإشعاع لدى المرضى البالغين في مدينة الملك عبد العزيز الطبية ، الرياض ، المملكة العربية السعودية

Your participation is voluntary and you have the right to not complete this survey without giving any reason and this will not affect your current or future medical care in MNG-HA.

إن مشاركتك في هذه الدراسة طوعية ولك الحق التام في عدم قبول تعبئة الاستمارة أو الانسحاب في أي وقت تشاء بدون ابداء الأسباب ولن يؤثر ذلك على العناية الطبية المقدمة لك حالياً أو في المستقبل في الشؤون الصحية بوزارة الحرس الوطني.

You do not have to sign this information sheet only you can choose to agree/disagree; your acceptance to complete the survey will be interpreted as your informed consent to participate.

لا يجب عليك التوقيع على ورقة المعلومات هذه ، فقط عليك الاختيار موافق / غير موافق فمجرد قبولك تعبئة هذا الاستبيان يعتبر بمثابة إقرارك بالموافقة على المشاركة في هذا البحث .

Your responses will be kept anonymous. However, whenever one works with email/the internet there is always the risk of compromising privacy, confidentiality, and/or anonymity. Despite this possibility, the risks to your physical, emotional, social, professional, or financial well-being are considered to be 'less than minimal'.

ستبقى الردود على الأسئلة سرية ومع ذلك ، فإن العمل عن طريق البريد الإلكتروني والانترنت يبقى هناك احتمال الاختراق خصوصية البيانات وسرية المعلومات ولكن بالرغم من هذه الاحتمالية تبقى الاخطار البدنية والعاطفية والاجتماعية والمهنية والمالية المترتبة عليك ضمن الحد الأدنى من الخطورة.

If you have any questions about the research, please contact (Dr. Ali Aldhebaib) (King Saud Bin Abdul-Aziz University for Health Sciences /0114295268/dhebaibaiba@ksau-hs.edu.sa).

إذا كان لديك أي أسئلة حول هذا البحث ، يرجى الاتصال (علي الضبيبي) (جامعة الملك سعود بن عبد العزيز للعلوم الصحية//البريد الإلكتروني)

In case you have any enquiries related to your rights as a research subject you can contact the Institutional Review Board on Tel 8011111 Ext. 14572.

في حال كان لديك الاستفسارات المتعلقة بحقوقك كموضوع بحث يمكنك الاتصال بمجلس المراجعة المؤسسية على هاتف 8011111 تحويلة 14572

- Agree to participate
 Disagree to participate

- موافق على المشاركة
 غير موافق على المشاركة

This information shall not be used, disclosed, or published without written approval from King Abdullah International Medical Research Center

Version No. (01)
:

Version (10 Oct 2017)
Date:

Kingdom of Saudi Arabia

Ministry of National Guard - Health Affairs



Questionnaire

You are invited to participate in our survey. This study is for getting your knowledge about the radiation. Your participation in this study is voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. It is very important for us to learn your opinions. Your survey responses will be strictly confidential. Your information will be coded and will remain confidential.

Please start with the survey. It will not take more than 5 minutes.

1. Area of radiological exam:

- CT
 Angiography
 X-rays
 Fluoroscopy

2. Job Type:

- Housewife
 Student
 Salaried
 Self-employed

3. Educational level:

- Less than high school
 High school
 College
 Masters
 PhD

4. Gender:

- Male Female

5. Age:

- 18-30
- 31-40
- 41-50
- 50 and older

	Agree	Disagree	Neutral
1. Ionizing radiation can harm the human body.			
2. The repeated radiological examination may increase the possible health hazard caused by ionizing radiation.			
3. Radiological procedures required to remove any metallic objects from the body.			
4. Using protective tools can minimize the possible health hazards caused by radiation to the body			
5. It is safe to undergo the radiological procedure during pregnancy.			
6. You are getting exposed to radiation during travel by flight.			
7. While you are in the home, you can be exposed to natural background radiation.			

1. Types of imaging modalities which do not use ionizing radiation?

- Computed Tomography Ultrasound X-rays Nuclear Medicine Don't know

2. Human body organ highly sensitive to ionizing radiation

- Heart Eyes Lungs Reproductive organs don't know

3. The Sensitivity level of radiation exposure in the pediatric compared to adult patients:

- More than adult same as adult Less than adult don't know

4. Have you ever asked your physician about the information of radiation?

- Yes No

© 2018 Aldhebaib et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sciencedomain.org/review-history/25000>