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Research Article

**THE EFFECT OF RADIATION ON PREGNANT WOMEN**<sup>1</sup>Hamza.H. Okal., <sup>2</sup>Hisham.M. Ymani, <sup>3</sup>Basim.H.Almalki, <sup>4</sup>Ayesh.M.Alkhuzaie,  
<sup>5</sup>Hasen.K.Alharthi , <sup>6</sup>Ali.M.Ashgar , <sup>7</sup>Abdulaziz. H. Muyidi.<sup>1</sup>Radiology at the primary Healthcare center in Al-Kaakiyah<sup>2</sup>Radiology at the primary Healthcare center in Al-Nuwariya<sup>3</sup>Radiology at the primary Healthcare center in Al-Nuwariya<sup>4</sup>X-ray technician in the executive management of supply chains, the health branch in Mecca<sup>5</sup>X-ray technician in Health Affairs in Mecca<sup>6</sup>X-ray technician in the Department of Compliance with the control department in the Mecca region<sup>7</sup>X-ray technician in the Department of Compliance**Article Received:** September 2022    **Accepted:** October 2022    **Published:** October 2022**Abstract:**

*The aim of this study is to find out the extent of the effects of exposure of pregnant women and their fetus to the risk of radiation, and to know people's opinions and impressions on the exposure of pregnant women to radiation and the risk of having dental caries. An electronic questionnaire was created through the Google Drive application, where this questionnaire was distributed to social networking groups WhatsApp, where 650 answers were obtained from those (residents of the city of Mecca), out of a total of 600 questionnaires.*

**Keywords:** Effect, radiation, pregnant women.

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### 1-INTRODUCTION:

Radiology or radiology is a section of drugs that uses medical imaging techniques with the goal of establishing a convenient diagnosis and sometimes therapy at the beginning of the emergence of this science, it was finite to the use of systems that emit X-rays in imaging techniques. Nowadays, this science has widened to contain other devices such as ultrasound, axial tomography, and magnetic resonance imaging (Schwartz, 2010). Radiology started with the finding of X-rays by German scientist Wilhelm Rontgen in 1895, and Rontgen won the Nobel Prize in Physics in 1905. In the first decades of the discovery of radiology, you had not realized the hazards of radiation exposure to technicians and doctors, as many of the first people who worked with radiology had different cancers of the skin, bone, and thyroid gland, in addition to cataracts and leukemia. While at the present time, all radiologists are watchers continuously and monthly. Diagnostic or therapeutic radiology devices, through which they participate in the diagnosis of various illnesses, are also used in the curing of some kinds, such as tumors and cancers. X-ray machine, computed tomography, M.R.I, Cobalt 60 device, Gamma Camera. Ultrasound device Radiation exposure during pregnancy has been discussed for years, but experts are continuing to show that there are increasingly passive impacts on the growing fetus as well as effects later in life. while the perfect influence is a diversity of speculations and proven patterns that suggest that pregnant women should not highly show up themselves to radiation during pregnancy (Charissa, 2006), women are in high danger of exposure to ionizing radiation outcoming from medical procedures and workplace exposure, and diagnostic or therapeutic interventions before the pregnancy. Such waves known as ionizing radiation are not associated with significant danger; therefore, ultrasonography is safe to perform during pregnancy. ionizing radiation includes particles and electromagnetic radiation (for example x-ray).in utero exposure to ionizing radiation can be teratogenic, carcinogenic, or mutagenic. the effects are directly related to the level of exposure and stage of fetal development. the fetus is most susceptible to radiation during organogenesis. non-cancer health impacts have not been detected at any phase of gestation after exposure to ionizing radiation of less than 0.05 Gy (5 rad). spontaneous abortion, outgrowth restriction may place at higher exposure levels. the risk of cancer is raised regardless of the dose (Pamela and Stacy,2010). very early exposure to even 10 reds of radiation in the first trimester of pregnancy carries a high risk of fetal death, according to perinatology. since the embryo at this point contains just a few cells, damage to even one

cell can be lethal. Normal X-rays submit far less radiation than 10 rad; however, curing for cancer or hyperthyroidism may come before a woman knows she is pregnant. since the dose of radiation extradites in these procedures is very high, in the thousands of red, according to a Health Physics Society article by Robert Brent studies M.D., there is a high chance of fetal damage. Barium studies also deliver more than 10 rad, according to perinatology.com. after 2nd trimester, the fetus is no more susceptible to radiation than a newborn would be, but doses of 100 rad or more lead to a raised danger of stillbirth.

### 2-MATERIAL AND METHODS:

This study was started in (the holy city of Mecca in Saudi Arabia), begin writing the research and then recording the questionnaire in June 2022, and the study ended with data collection in October 2022. The researcher used the descriptive analytical approach that uses a quantitative or qualitative description of the social phenomenon (the effect of radiation on pregnant women). This kind of study is characterized by analysis, reason, objectivity, and reality, as it is concerned with individuals and societies, as it studies the variables and their effects on the health of the individual, society, and consumer, the spread of diseases and their relationship to demographic variables such as age, gender, nationality, and marital status. Status, occupation (Alserahy et al,2008), And use the Excel 2010 Office suite histogram to arrange the results using: Frequency tables Percentages (Al Zoghbi, and AlTalvah, 2000).

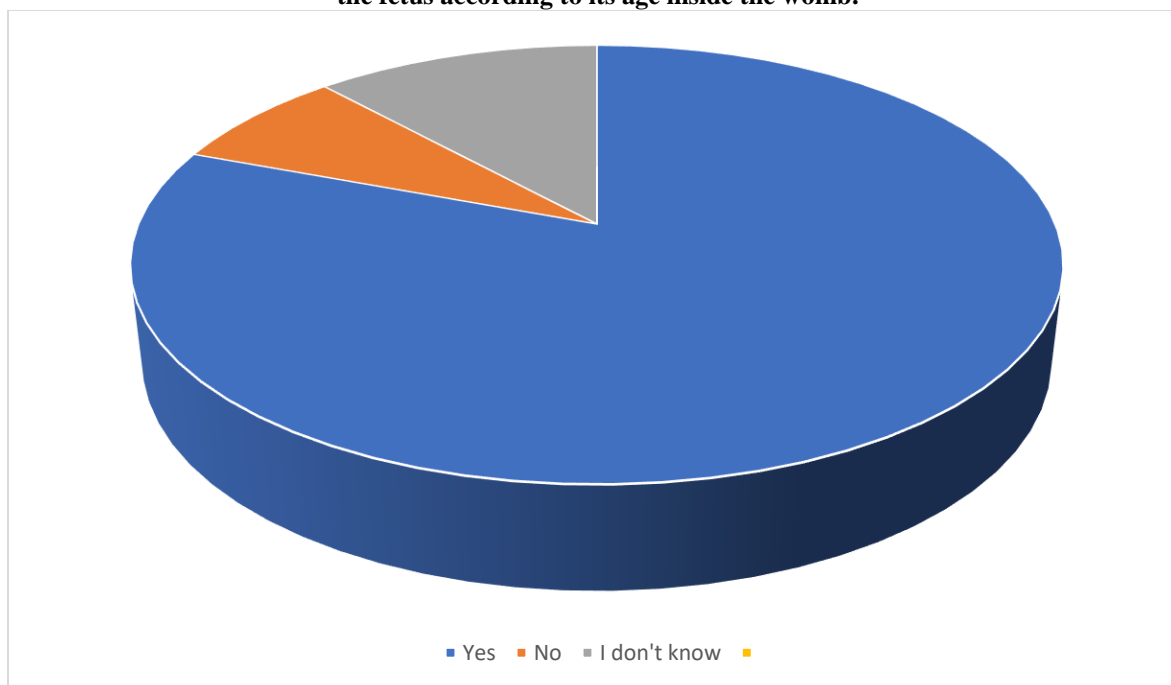
### 3- RESULTS:

A questionnaire is a remarkable and useful tool for collecting a huge amount of data, however, researchers were not able to personally interview participants on the online survey, due to social distancing regulations at the time to prevent infection between participants and researchers. only answered the questionnaire electronically, the questionnaire consists of 11 closed and two opened (13 questions). The ages of the participants in the questionnaire were as follows: From 16-23 years old, their percentage was 9.4%, 24-31 (18.1%), 32-39 (15.6%), 40-47 (33.8%), 48-55 (23.1%). As for the gender of the participants, the percentage of males was 27.8%, and the percentage of females (women) was 72.2%, as for their nationalities, they were Saudis 95.6%, and non-Saudis 4.4%. As for the professions of men, the percentage of students was 8%, a government employee 69%, a private sector employee 9.2%, self-employed 2.3%, a causer (not working). 11.5%. As for the professions of women, the percentage of female students was 9.1%, government employees 46.3%, private sector employees 6%,

freelance business women 2.2%, and housewives 36.4%. The first question about Do you think that the exposure of a pregnant woman to radiation affects the fetus according to the age of the fetus inside the womb? Yes 80.7%, No 7.5%, I don't know 11.8%. As for the second question, which is, are there cases (pregnant women) that can be diagnosed without x-rays to determine the extent of the danger to the fetus? Yes 36.4%, No 26.5%, I don't know 37%. The third question is about whether X-rays should be used for all cases (pregnant women) to confirm the diagnostic status? Yes, and I do not know the same answer 25.6%, while no 53.8%. The fourth question: Do you think that the exposure of a pregnant woman to radiation during the first three months of pregnancy poses a threat to the health of the pregnant woman and the fetus? Yes 82.1%, No 4.3%, I don't know 13.6%. The fifth question: Do you think that the use of radiation shields is necessary to reduce the risk of radiation to the pregnant woman? Their percentage was yes 80.7%, no 5%, I don't know 14.3%. As for the sixth question, do you think that increased exposure to radiation poses a threat to the health of the pregnant woman and her fetus? Yes 90.1%, No 6.3%, I don't know 3.6%. The seventh question: Do you think that exposure to radiation causes birth defects in the fetus during the first pregnancy? The percentage of answers

was yes 76.4%, no 8.1%, I don't know 15.5%. The eighth question is, do you think that it is possible to postpone exposure of a pregnant woman to radiation until delivery in most cases? Yes 64.6%, No 14.9%, I don't know 20.5%. As for the ninth question, do you think that dental rays (panorama) affect the fetus in the first months of pregnancy? Yes 51.6%, No 16.1%, I don't know 32.3%. The tenth question: What is the question that you think is important to ask when a pregnant woman is exposed to radiation? The answers varied between I don't know, and the doctor and the x-ray technician are supposed to tell you what month you are, and does it affect the fetus. The eleventh question: What do you think is the number of times a pregnant woman is allowed to be exposed to radiation? The answers were different between I don't know and one or two. The penultimate question about Do you think that dental x-rays represent an imminent danger to a pregnant woman (in the event of assistance in extracting or detecting a decayed tooth in her)? The answers were yes 44.4%, no 29%, I don't know 26.5%. The last question about Do you think that periodic maintenance of X-ray machines is important and necessary to ensure that no X-rays are leaked to all people, especially pregnant women? Yes 91.3%, No 6.2%, I don't know 2.5%. (figure No.1).

**Figure No.1: Participants' opinions about the exposure of the pregnant mirror to radiation and its effect on the fetus according to its age inside the womb.**



**4-DISCUSSION:**

Through the results of the current study, we find that most of the participants are fully aware of the risk of anorexia for a pregnant woman and her fetus according to its age by 80%, and they know that the period of exposure of a pregnant woman to radiation during the first months represents a risk to her by 82.1% and that the use of condoms is necessary to reduce the risk of radiation to her by 80.7%. 90.1%, and that the increased exposure of a pregnant woman to radiation to her and causes a risk to her and his health by 90.1%, and that radiation causes congenital deformities to the fetus by 76.4%, while panorama rays (dental rays) represent a risk to her by less than half or more than (44.4%). To (51.6%), of course, maintenance must be done for x-ray machines, because any leakage of X-rays represents a risk of 91.3% for her and her fetus. This study recommends that pregnant women be spared the risk of exposure to radiation, and the use of ultrasound imaging is better for the health of the pregnant woman and the health of her fetus, which is similar to the recommendation of the study (Abdalla, 2015).

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