**Methodological procedures for the study and results of the study :**

This chapter deals with the methodological procedures that we followed to measure in nurses employed by the hospital in the operating room for at least three months or newly hired nurses who had successfully completed their probationary period from Open University of Malaysia and approval from the Manager of Operating Room, in one of the governments funded Hospital, Jeddah Saudi Arabia : the objectives of the study, the methodology used, the design of the questionnaire, and calculating its validity and reliability. Then the statistical method used to analyze the study data. As shown in the following presentation.

**Study Approach :**

In order to achieve the objectives of the study, we used the analytical survey method, which depends on collecting facts, information and data with the intention of describing, analyzing and interpreting them to draw conclusions.

**The study sample :**

Statistical equations were used to determine the appropriate minimum for a study sample (110). After application, we obtained a questionnaire and design suitable for statistical analysis. The following is a presentation of the most important characteristics of the study sample.

**Table 1: Distribution of sample members according to gender :**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Gender** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Female | 87 | 79.1 | 79.1 | 79.1 |
| Male | 23 | 20.9 | 20.9 | 100.0 |
| Total | 110 | 100.0 | 100.0 |  |

It is clear from the previous table that 79.1% of the sample are female and 20.1% of the sample are male, meaning that the percentage of females is higher than the percentage of males and meaning nurses employed by the hospital in the operating room for at least three months are female .

A blue and red pie chart

Description automatically generated

**The figure shows the distribution of sample members according to gender, meaning that the percentage of females is higher than the percentage of males.**

**Table 2: Distribution of sample members according to Age group:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age Group** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 25 YEARS – 35 YEARS | 34 | 30.9 | 30.9 | 30.9 |
| 36 YEARS – 45 YEARS | 41 | 37.3 | 37.3 | 68.2 |
| 46 YEARS – 55 YEARS | 27 | 24.5 | 24.5 | 92.7 |
| 56 YEARS AND ABOVE | 8 | 7.3 | 7.3 | 100.0 |
| Total | 110 | 100.0 | 100.0 |  |

It is clear from the previous table that 30.9 % of the sample are 25-35 years ,37.3 % are 36-45 years,24.5% 46-55 years and 56% and above 7.3% are smaller sample and mean that The sample of 36 YEARS- 45 YEARS is the largest proportion. This means that this age is the one that bears the pressure of work .

A graph of age groups

Description automatically generated

**The figure shows the distribution of sample members according to Age Group.**

|  |  |  |
| --- | --- | --- |
| **Statistics** | | |
| Age Group | | |
| N | Valid | 110 |
| Missing | 0 |
| Mean | | 2.08 |
| Std. Deviation | | .920 |

This table show Mean equal 2.08 and std deviation equal 0.920. The smaller the standard deviation indicates that there are no differences in ages between them. This means that the age ratio is similar.

**Table 4: Distribution of sample members according to Area of working:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Area of Working** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | HOLDING BAY | 15 | 13.6 | 13.6 | 13.6 |
| INTRA OPERATIVE | 72 | 65.5 | 65.5 | 79.1 |
| RECOVERY ROOM | 23 | 20.9 | 20.9 | 100.0 |
| Total | 110 | 100.0 | 100.0 |  |

The highest percentage are those who work in intra operative. This means that there are many operations that require nurses.

**Table 5: Distribution of sample members according to**

**Frequent you got exposed to radiation :**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **HOW** **FREQUENT YOU GOT EXPOSED TO RADIATION?** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | EVERYTIME | 43 | 39.1 | 39.1 | 39.1 |
| NEVER | 5 | 4.5 | 4.5 | 43.6 |
| OCCATIONALLY | 17 | 15.5 | 15.5 | 59.1 |
| RARELY | 8 | 7.3 | 7.3 | 66.4 |
| WEEKLY MORE THAN 3 TIMES | 37 | 33.6 | 33.6 | 100.0 |
| Total | 110 | 100.0 | 100.0 |  |

The highest percentage are those who got exposed to radiation everytime. This means that nurses are present in large numbers in the operating room and the necessary precautions must be taken

A graph with blue squares

Description automatically generated

**The figure shows the distribution of sample members according above.**

**2-Stability of the scale :**

The research calculated the reliability of the scale using the Cronbach Alpha method. It turns out that the value of the alpha coefficient is 0.84, and this indicates the extent of stability. Note that the value of the alpha coefficient ranges between 0 and 1, and the closer the result is to one, the greater the stability. While being close to zero indicates a lower degree of stability. The following table explains this.

|  |  |
| --- | --- |
| **Reliability Statistics** | |
| Cronbach's Alpha | N of Items |
| .840 | 27 |

**Table 5: Distribution of sample members according wearing x-ray badge during the procedure that requires x-rays with chi square :**

|  |  |
| --- | --- |
| **Test Statistics** | |
|  |  |
| Chi-Square | 54.727a |
| df | 4 |
| Asymp. Sig. | .013 |
|  | |

**It is clear from the chi-square test that there are statistically significant differences between the actual response and the expected response, with a value of less than 0.05.** **There must be awareness about wearing x-ray badge.**

**Table 6: Distribution of sample members according wearing a lead apron during procedures that require the use of ionizing radiation with chi square.**

|  |  |
| --- | --- |
| **Test Statistics** | |
|  | nursing |
| Chi-Square | 147.727a |
| df | 4 |
| Asymp. Sig. | .006 |
|  | |

**It is clear from the chi-square test that there are statistically significant differences between the actual response and the expected response, with a value of less than 0.05.** **There must be awareness about wearing a lead apron.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Frequency (f)** | **std deviaton Mean** | | |
|  |  | | |
| Understanding on Ionizing radiation exposure. | | **0.89** | **0.313** | |
| Understanding the importance of protecting yourself from ionizing radiation. | | **0.92** | **0.275** | |
| Awareness of the Hospital’s policy regarding radiation protection | | **0.52** | **0.502** | |
| Knowledge on complications of radiation exposure. | | **0.65** | **0.478** | |
| Knowledge regarding radiation protective equipment. | | **0.84** | **0.372** | |
| Protective equipment is important to protect from Radiation Protection? | | **0.89** | **0.313** | |
| Understanding on importance of ionizing radiation protection safety training. | | **0.83** | **0.380** | |
| Understanding on importance of ionizing radiation protection safety training. | | 0.94 | 0.245 | |
| **Knowledge regarding types of radiation protective equipment**   1. Lead Apron / Lead Vest with skirt 2. Lead Thyroid collar 3. Radiation Safety eye goggles 4. Lead gloves 5. Radiation safety head cap | | 0.70  0.43  0.92  0.19  0.79 | **0.460**  **0.497**  **0.456**  **0.394**  **0.409** | |
| **Knowledge regarding use of Dosimeter** | | 0.35 | **0.481** | |

**Table show mean and standard deviation for each statemen.** **The lower standard deviation indicates that there are no differences between the responses of the sample members.**

|  |  |  |
| --- | --- | --- |
|  | Mean | Std deviation |
| You are wearing your x-ray badge during the procedure that requires x-rays? | **2.11** | 1.1316 |
| You are wearing a lead apron during procedures that require the use of ionizing radiation? | 1.66 | 1.119 |
| You are wearing a thyroid shield during procedures that require the use of ionizing radiation? | 2.95 | 1.630 |
| Maintaining 2 Meter of distance from the radiation emitting device during exposure. | 2.95 | 1.553 |
| Practice of using Dosimeter during ionizing exposure | 1.58 | 0.802 |

**Table show mean and standard deviation for each statement .** **It shows that the standard deviation is large, which indicates that precautionary measures have been taken.** **This indicates that the standard deviation is large, and therefore there are differences between the responses of the sample members and The lower the standard deviation indicates that there are no differences between the responses of the sample members.**

**Table show correlation between wearing a lead apron and practice dosimeter.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Correlations** : Spearman's rho | | | Practice of using Dosimeter during ionizing exposure |
| Spearman's rho | You are wearing a lead apron during procedures that require the use of ionizing radiation? | Correlation Coefficient | .928\*\* |
| Sig. (2-tailed) | .000 |
| N | 110 |

**The following table shows that the correlation coefficient is equal to 0.928 which indicates the existence of a direct relationship between wearing a lead apron and practice dosimeter.**

**Table show correlation between Maintaining 2 meter of distance and practice dosimeter.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Correlations** : Spearman's rho | | | Practice of using Dosimeter during ionizing exposure |
| Spearman's rho | Maintaining 2 Meter of distance from the radiation emitting device during exposure. | Correlation Coefficient | .862\*\* |
| Sig. (2-tailed) | .000 |
| N | 110 |

**The following table shows that the correlation coefficient is equal to 0.928 which indicates the existence of a direct relationship between Maintaining 2 meter and practice dosimeter.**

**Results and recommendations :**

- wearing x-ray badge during the procedure that requires x-rays. They help you follow your Radiation Protection Program (RPP) and ALARA guidelines. Radiation is undetectable to human senses. Radiation scatters, making shielding more difficult.

- wearing a lead apron during procedures that require the use of ionizing radiation. Lead aprons are the primary radiation protective garments used by personnel during fluoroscopy. The radiation protection provided by a lead apron is approximately the same as 0.25- to 1-mm thick lead to protect them.

- wearing a thyroid shield during procedures. members of staff or patients should wear a thyroid shield during some medical imaging scans to decrease the amount of radiation to the thyroid gland.

- They should Maintaining 2 Meter of distance from the radiation emitting device during exposure.

- Practice of using Dosimeter during ionizing exposure.

- increasing of Provision of ionizing radiation protective equipment (RPE).

- Protective equipment is important to protect from Radiation Protection to protect them.