# A Study to Evaluate the Effectiveness of Structure Teaching Programme on Knowledge Regarding Hazards of Radiation Exposure and Its Preventive Measures Among Staff Nurses

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## ABSTRACT

*Radiation is the energy that propagates through matter or space. Radiations are usually classified in to non-ionizing and ionizing radiation. Ionizing radiation is the main concern for health effects since it can change chemical properties in human body. When radiation pears a body that can deposit energy that can directly damage the DNA in tissue that would eventually cause damage to critical chemical bond in body. So, it is necessary to minimize radiation hazards in hospital settings. Appropriate education through the structured teaching programme is necessary to minimize the risk of exposure to nursing staffs. Preexperimental, one group pre-test and post-test design was used to conduct the study. Study was conducted in the Hospital, Dharwad. Nonprobability purposive sampling technique was used to select the 50 samples. Structured knowledge questionnaire on hazards of radiation exposure and its preventive measures was used for data collection. Reliability was estimated by using test–retest method and obtained reliability was r=0.81. The result showed that before teaching programme the majority 76% (38) of staff nurses had average knowledge, 22% (11) had poor knowledge and 2% (1) of the staff nurses had good knowledge. After teaching programme the majority, 64% (32) of staff nurses had good knowledge and 34% (17) of them had average knowledge, 2% (01) of the staff nurses had poor knowledge. In the present study the result showed that in pre-test the mean score was ± 13.32 and SD was ± 4.16 whereas the mean of post-test score was ± 20.96 and SD was ± 3.94. The obtained or calculated 't' value was ±18.98 which was higher than the table 't' value i.e. 2.09 which is highly significant at p ≤ 0.05 level (p=0.0001). Hence, the null hypothesis is rejected. Finally result depicts that structured teaching programme was effective in enhancing the knowledge of staff nurses regarding hazards of radiation exposure and its preventive measures.*

**Keywords:** education, hazards, ionizing, knowledge, radiations

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## INTRODUCTION
Radiation is the energy that propagates through matter or space [1]. Radiation energy can be in the form of waves or particles [2]. Radiations are usually classified in to Non-ionizing and ionizing radiation [3]. Ionizing radiation is the main concern for health effects since it can change chemical properties in human body [4]. When radiation enters a body can deposit enough energy that can directly damage DNA or cause much ionization of atoms in tissue that would eventually cause damage to critical chemical bond in body [5]. The hazards of radiation exposure can be acute or chronic depending on the exposure of the individuals. So, it is necessary to minimize radiation hazards in hospital settings by following the preventive measures of

radiation effects [6]. It is important to limit the radiation exposure by minimizing the time spent in the room during radiographic procedures, wearing of protective shielding devices such as lead aprons, lead gloves etc. no individuals are permitted in the X-ray room during radiographic exams unless lead apron is worn, person is 18 or older all individuals have to follow safe radiation procedures as directed by the radiologists [7]. It is imperative that all nursing staff, working in areas where ionizing radiation is only half the battle [8]. Educating them about the potential dangers and how to reduce their exposure is the next step. Appropriate education through the structured teaching programme is necessary to minimize the risk of exposure to nursing staffs, structured teaching programme refers to systematically developed instructional method and teaching aids designed for nursing staffs to impart knowledge regarding hazards of radiation exposure and its preventive measures.

### Objectives of the Study
Objectives of the study are to:
- assess the level of knowledge of staff nurses regarding hazards of radiation exposure and its preventive measures.
- assess the efficiency of construction teaching programme on information regarding dangers of energy exposure and its protective actions.

### Hypothesis of the Study
$H_1$: There will be significant difference between the mean pre-test and post-test knowledge scores regarding hazards of radiation exposure and its preventive measures among staff nurses.

### MATERIALS AND METHODS
In the present study the researcher aimed at evaluating the effectiveness of structure teaching programme on knowledge regarding hazards of radiation exposure and its preventive measures among staff nurses. Preexperimental, one group pre- and post-test design is used to conduct the study. Study was conducted in the SDM Hospital, Dharwad. Nonprobability purposive sampling technique was used to select the 50 samples. Structured knowledge questionnaire on Hazards of radiation exposure and its preventive measures was used for data collection which consisted of 30 items and the knowledge score was arbitrarily classified as poor (0–9), average knowledge (10–20), and good knowledge (21–30). Reliability was estimated by using test-retest method and obtained reliability was r=0.81. The investigator obtained written permission from the concerned hospital authority prior to study.

### RESULTS
The data presented in Table 1 shows that majority 76 % (38) of staff nurses had average knowledge, 22% (11) had poor knowledge and 2% (1) of the staff nurses had good knowledge.

***Table 1.*** *Pre-test knowledge scores of staff nurses on hazards of radiation exposure and its preventive measures. (n=50).*

| Level of knowledge | Score | Frequency (f) | % (Percentage) |
|---|---|---|---|
| Poor | 0–9 | 11 | 22% |
| Average | 10–20 | 38 | 76% |
| Good | 21–30 | 01 | 2% |
| Total | | 50 | 100% |

The data presented in Table 2 shows that majority of 64% (32) of staff nurses had good knowledge and 34% (17) of them had average knowledge, 2% (01) of the staff nurses had poor knowledge.

***Table 2.*** *Post-test knowledge scores of staff nurses on hazards of radiation exposure and its preventive measures. (n=50).*

| Level of knowledge | Score | Frequency (f) | % (Percentage) |
|---|---|---|---|
| Poor | 0–9 | 01 | 2% |

| Average | 10–20 | 17 | 34% |
|---------|-------|-----|------|
| Good | 21–30 | 32 | 64% |
| Total | | 50 | 100% |

Table 3 shows that in pre-test the mean score was ±13.32 and SD was ±4.16 whereas the mean of post-test score was ±20.96 and SD was ±3.94. The obtained or calculated 't' value was ±18.98.

**Table 3.** *Effectiveness of structured teaching programme on knowledge regarding hazards of radiation exposure and its preventive measures. (n=50).*

| Observations | Mean | SD | Mean difference | df | 'P' value | Paired 't' test |
|--------------|------|-----|-----------------|-----|-----------|-----------------|
| Pre-test | 13.32 | 4.16 | 7.64 | 49 | 0.0001 | 18.98 |
| Post-test | 20.96 | 3.94 | | | | |

## DISCUSSION

In the present study the result showed that in pre-test the mean score was ±13.32 and SD was ±4.16 whereas the mean of post-test score was ±20.96 and SD was ±3.94. The obtained or calculated 't' value was ±18.98 which was higher than the table 't' value i.e. 2.09 which is highly significant at $p \leq 0.05$ level (p=0.0001). Hence, the null hypothesis is rejected and research hypothesis is accepted. Finally, result showed that structured teaching programme was effective in enhancing the knowledge of staff Nurses regarding hazards of radiation exposure and its preventive measures.

## CONCLUSION

Nurses are key personnel of health team, who plays a vital role in the health promotion and maintenance. Nursing is a practice of profession, so the investigator generally integrates finding into practice. The health teaching in health care area is one of the important aspects in the health care. In-service education improves the staff nurses' knowledge on hazards of radiation exposure and its preventive measures. The result of the study is useful in planning the health care actions in different settings. Staff development programme in any organization is the primary responsibility of the nurse administrator. In the era of development of advanced technology, demand for quality and competent care, improved awareness on dignity of life, all poses challenges to nurse administrators to demonstrate their efficiency in providing information regarding hazards of radiation exposure and its preventive measures.

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