

# Effect of Structured Teaching Programme on Knowledge Regarding Occupational Health Hazards and Safety Measures among Group-D Staff in Selected Hospital Of West Bengal

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## Abstract:

The investigator conducted a pre-experimental research study to evaluate the effect of structured teaching programme on knowledge regarding occupational health hazards and safety measures among Group-D staff. In this study the conceptual framework was based on general system model. One group pre- test post-test research design was adopted on 60 Group-D staff of N.R.S.M.C. & H. An interviewing schedule on knowledge was used. The findings of the study revealed that, the mean pre-test and post- test knowledge score were 16.01 and 27.96, and the structured teaching programme was effective as calculated paired 't' value =  $19.50 * t'(59) = 2.00$   $p < 0.05$ . Statistically significant association was found between pre-test knowledge level of Group-D staff with academic qualification and exposure, injury management for protection of worker at 0.05 level of significance. The findings of the study can be implicated in nursing practice, nursing administration and nursing research. The recommendations are offered so that the study can be replicated on larger sample.

**Key word:** Occupational health hazards, Safety measure, Biomedical waste management, Post-exposure prophylaxis, Radiation hazards, Personal protective equipment, Hand washing.

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## I. Introduction

### Background of the study:

Occupational health is the concern of human wellbeing. The service giving resulting in workplace health problem brooming workplace safety and health hazards now a days, considered as a driving force. At present, hospitals have been slow to recognize the health hazards and safety measures that confront their employees. So, occupational health is the prime concern for the welfare of their workers. Common occupational hazards in hospitals are needle stick injury, hospital acquired infection, transfusion transmitted diseases, rising incidence of certain bloodborne diseases like hepatitis B & Human immune-deficiency virus, electrical hazards, electrical burn, chemical burn, stress, anxiety, deafness, blindness, falls, cuts, sprain, back pain, damage to eyes, incidence of pulmonary tuberculosis, respiratory troubles of inhalation of gases. Hazards related to using various cytotoxic drug, radiation all these are harmful to a worker of a hospital. Safety measures includes biomedical waste management and general cleanliness of environment, post-exposure prophylaxis, prevention of radiation hazards, personal protective equipment and hand washing are serious concern.<sup>14</sup>

Arasi Senthil et al. conducted a study on 482 health care workers in 2015 to describe the perception of occupational health hazards and self-reported exposure prevalence among HCWs in Southern India. It was found that thirty nine percent didnot recognize work-related health hazards, but reported exposure to at least one hazard upon further probing. 81.5% reported exposure to biological hazards. 93.9% had direct skin contact with infectious materials and. HCWs reported needle stick injury, 70.5% had at least one in the previous three months. Ergonomic hazards included lifting heavy objects (42%) and standing for long hours (37%). Psychological hazards included negative feelings (20.3%) and verbal or physical abuse during work (20.5%).<sup>16</sup>

### Need of the study:

Occupational health hazards and safety measures concerns, ergonomics though not new but have recently emerged as vital factors in the economic and social lives of hospital employees. It appears that, steps need to be taken by the health care system which has previously been motivated to care mainly for the sick, to channel more of its resources, energy and man possessed towards prevention of illness and accidents. Butnow

occupational health has great impact in the world. From researcher's point of view there was no such study in West Bengal on 'occupational health hazards and safety measures'. Therefore, the researcher would like to conduct a Structured teaching programme on Occupational health hazards and safety measures among Group-D staff which can spread awareness and can protect Group-D staff from various work related hazards .

## **II. Research Methodology**

**Research approach:** Pre-experimental research approach

**Research design:** One group pre-test post-test design

**Variables:** Independent variables: Structured teaching programme on occupational health hazards and safety measure.

Dependent variable: Knowledge of group-D staff about occupational health hazards and safety measure.

Demographic variables and general information - Age, sex, working experience, Academic qualification, Present working ward, experience of needle stick injury of the worker, Airborne precaution injury management of worker, Experience of needle stick injury, Received post-exposure prophylaxis for occupational exposure, Information regarding hospital having treatment facilities for getting post-exposure prophylaxis.

**Setting of the study :** Nilratan Sircar Medical College and Hospital

**Population of the study :** All Group-D staff worked in selected hospital, West Bengal, India

**Sample :** Group -D staff of selected hospital of West Bengal .

**Sampling criteria :**

**Inclusion criteria:** Group-D staff and selected hospital available at the time of data collection & willing to participate in the study .

**Exclusion criteria :**

Group-D staff who were working at other hospital .

Those Group-D staff were ill on the day of data collection .

Group-D staff who were not understand the language Bengali .

**Sample size-** In this study total sample was 60

**Data collection tools-** Interviewing **Techniques-**For tool I Semi-structured interview schedule and For tool II structured interview schedule.

## **III. Analysis and interpretation of data**

**Table-3** Frequency and percentage distribution of samples related to age, sex are given below.

n60

Variable	Frequency	percentage
<b>1. Age</b>		
21-30	14	23.33
31-40	27	45.00
41 and above	19	31.66
<b>2. Sex</b>		
Male	37	61.66
Female	23	38.33

Data presented in the Table 3 depicted that majority 45% of Group-D staff were in the age group 31-40 years and 31.66% of Group-D staff were in the age group of 41 years and above 41 years, and minimum 23.33% were belongs to 21-30 years, the data further revealed that majority 61.66 % of them were male and minimums 38.33% of them were female.

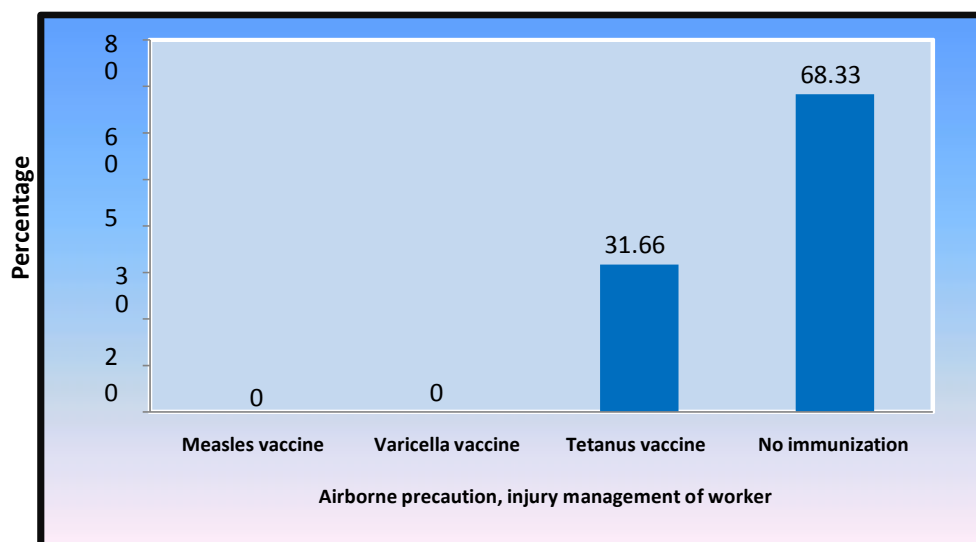
**Table 4** Frequency and percentage distribution of samples related to working experience, academic qualification are given below

n=60

Variables	Frequency	Percentage
<b>1. Working experience</b>		
1-5 years	17	28.33
6-10 years	20	<b>33.33</b>
11-15 years	12	20.00
16-20 years	11	18.33
<b>2. Academic qualification</b>		
Primary	19	31.66
Secondary	34	<b>56.66</b>
H.S. and above	7	11.66

The data presented in the table 4 depicted that majority 33.33% had working experience 6-10 years and 28.33 % had 1-5 years experience, 20% had 11-15 years experience and minimum number i.e. 18.33 % of them had 16-20 years working experience, the data also showed that majority (56.66%) of the Group-D staff were educated till secondary level, 31.66% of the sample had academic qualification up to primary level and minimum 11.66% of the sample under the study had academic qualification H.S. above H.S. level.

n=60



**Figure 9** Bar diagram showing Percentage distribution regarding air borne precautions, injury management for protection of worker

The data presented in the Figure 9 showed that majority of the respondents 68.33% were not immunized against measles, chickenpox, or tetanus, and 31.66 % of them received tetanus vaccine. No one immunised by measles vaccine and varicella vaccine.

Findings related to knowledge score before and after administration of Structured teaching programme on occupational health hazards and safety measures.

n=60

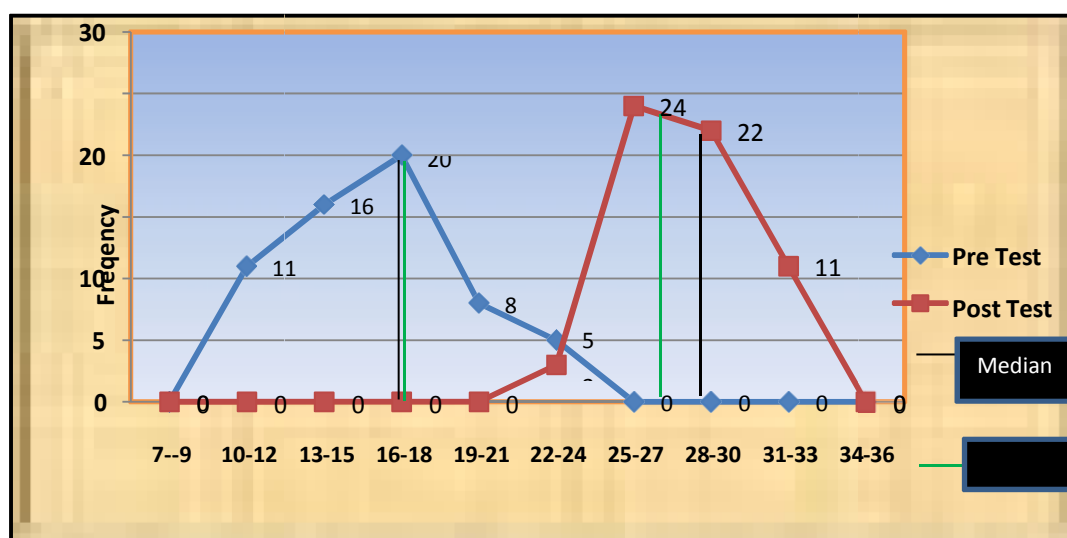


Figure 12 Frequency polygon of the pre-test and post-test knowledge score of Group-D staff regarding occupational health hazards and safety measures.

The Frequency polygon in Figure 12 showed that the distribution of pre-test and post-test knowledge score with depiction of mean and median and it also revealed that maximum Group-D staff obtained knowledge score in the range of 16-18 with mean 16.01 and median 16 and maximum frequency lies 20 (33.33%) in pre-test where as in the post test majority of the group-D staff score range 25-27 with the mean 27.96 and median 28 and the maximum frequency 24 (40 %). The figure 5 also depicted that in pre-test knowledge score mean 16.01 lies to the slightly right of the median 16. So the distribution is positively skewed,  $SK=0.27$  indicating that scores were normally distributed, where as the post- test knowledge score mean 27.96 lies slightly left of the median (28). So, the distribution is negatively skewed ( $Sk$ ) = -0.0059.

Findings related to effectiveness of structured programme regarding occupational health hazards and safety measures.

Table 6 Mean, mean difference, S.D. and paired ‘t’ value of pre-test and post-test knowledge scores of Group-D staff regarding occupational health hazards and safety measures n=60

Group	Test	Range	Mean	Mean difference	Median	Standard deviation	Period ‘t’ value
Group-D staff	Pre-test	10-24	16.01		16	3.61	
	Post-test	11-33	27.96	11.95	28	2.51	19.50*

Maximum possible score=36, minimum possible score=0, ‘t’ df(59)=2, ‘\*’=significant p<0.05\*

Data represented in the Table 6 showed that post test mean knowledge score (27.96) was higher than pre-test mean knowledge score (16.01) with a mean difference of 11.95. The data further indicated that median of pos-test knowledge score (28) was higher than median pre test knowledge score (16). Statistical ‘t’- value is significant at 0.05 level of significance in 59 degree of freedom (2.00).

Thus, the research hypothesis was accepted and null hypothesis was rejected. So, it is indicated that Structured teaching programme was highly statistically significant and effective in improving the knowledge of Group-D staff regarding occupational health hazards and safety measures. The data further revealed that

standard deviation of post-test knowledge score was 2.51 and standard deviation of pre-test knowledge score was 3.61 which show that the pre-test knowledge score seems to be more dispersed than those of post-test knowledge score. Distance of the scores to the average was closer in post-test than pre-test.

n=60

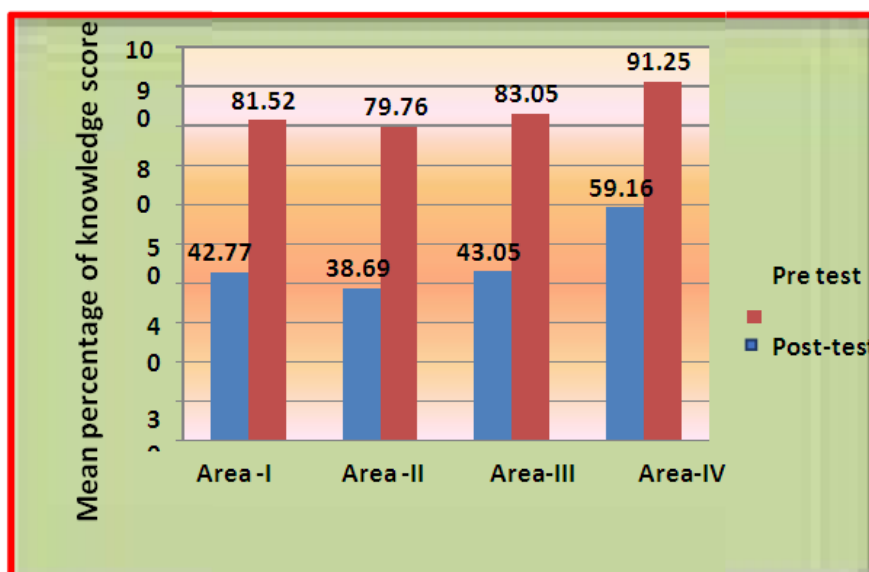


Figure 13 Bar diagram showing area wise effectiveness of structured teaching programme in terms of change in mean percentage of pre-test and post-test knowledge score.

In figure 13 the comparison of mean percentage of pre-test and post-test knowledge scores of group-D staff in different areas of Occupational health hazards and safety measure showed that the group-D staff were having maximum knowledge in pre-test score was 59.16% and post-test score was 91.25% in Area-IV i.e. others safety measures like personal protective equipment, hand washing where as in the Area-III Safety measures regarding post-exposure prophylaxis, radiation hazards the pre-test score was 43.05% and post-test score was 83.05% in the Area-1 occupational health hazards, occupational environment pre-test score was 42.77%, and post-test score was 81.52%. In Area II i.e safety measures like Bio- medical waste management and general cleanliness of environment there was lowest score in both pre-test score 38.69 %, and post test score 79.76%. Findings related to association between pre-test knowledge score with selected demographic variables

In order to find out statistical significance existing between pre-test and selected demographic variables, null hypothesis (H0) was formulated. The null hypothesis was stated as -There is no significant association between level of pre-test knowledge score and selected demographic variables at 0.05 level of significance.

Table 7 Chi-square association between pre-test knowledge score with selected demographic variables. (i.e. Age, Academic qualification, Exposure and injury management for protection of worker)

n=60

Variables	Knowledge Median value	Chi-square value	df	Significance
1.Age	16	0.1795	1	NS
2.Academic qualification	16	10.93*	1	NS
3.Exposure ,injury management of worker	16	66.44*	1	Significant

Chi-square ( $\chi^2$ ) value at df (1)=3.84  $p < 0.05$  ,\*= Significant, NS=notsignificant ( $p > 0.05$ )

The data presented in the Table 7 illustrates that there was no association between pre-test knowledge level of Group-D staff and with selected variables like age, There was significant association between pre-test knowledge level of Group-D staff and selected variables like academic qualification and Exposure , injury

management for protection of worker and the chi-square value was 10.93\* and 66.44\* at 1 degree of freedom at 0.05 level of significance. So null hypothesis was rejected and research hypothesis was accepted.

#### **IV. Discussion**

- Out of 60 Group-D staff, maximum number 27 (45%) Group-D staff belonged to the age group 31-40 years.
- Maximum numbers 37 (61.66%) Group-D staff was male.
- Majority of the respondents 20 (33.33%) had working experience 6-10 years.
- Most of the respondents 34 (56.66%) had academic qualification up to secondary level.
- Among the participant 41 (68.33%) of them were not immunized against measles, chickenpox, or tetanus vaccine.
- Majority of the participant 48 (78.33%) were not experienced needle stick injury.
- Data depicted majority 47 (78.33%) of the Group-D staff were not received post exposure prophylaxis.
- Majority numbers 51 (85%) of Group-D staff knew that hospital having treatment facilities for post-exposure prophylaxis.
- It had been found out in the pre-test, that out of 60 Group-D staff, 33.33% Group-D staff scored between 16-18, 26.66% between 13-15, 18.33% scored between 10-12, 13.33% scored between 19-21, only 8.33% scored between 22-24.
- The mean pre-test knowledge and score was 16.01 and maximum frequency lies 20 (33.33%) in the range of 16-18, where as in the post-test the most of the Group-D staff i.e. 40% scored between 25-27, 36.66% scored between 28-30 and 18.33% scored between 31-33, 5% scored between 22-24, with the post-test knowledge score was 27.96.
- The distribution is positively skewed, skewness = 0.27 indicating that scores are normally distributed, where as post test knowledge score mean (27.96) lies slightly left of the median (28). The distribution is 'negatively skewed, skewness = -0.0059.
- Area wise distribution of pre-test and post-test knowledge score reveal that there was gain in knowledge in each area of structured teaching programme. The pre-test and post-test mean score shows that maximum gain in score was in the area of others safety measures like personal protective equipment, handwashing (32.09).

The table value of 't' was 2.00 at df 59 at 0.05, obtained value was 19.50\*. So, it is statistically proved that calculated 't' value was (19.50)\* was higher than table value at (0.05) level of significance. Hence the research hypothesis H1 is accepted and null hypothesis H0 is rejected. It implied that Structured teaching programme on Occupational health hazards and safety measure was effective in enhancing knowledge of Group-D staff.

Findings shows that there was no significant association between pre-test knowledge score and academic qualification and exposure, injury management for protection of worker. The table value of ( $\chi^2$ ) at df 1 was 3.84, Obtained value ( $\chi^2$ ) was 10.93 and 66.44 at df 1, higher than the table value at 0.05 level.

#### **V. Conclusion**

On the basis of the finding of the study following conclusion is drawn.

There is deficiency in knowledge among Group-D staff on occupational health hazard prior to administration of Structured teaching programme. Even it is found that Structured teaching programme is effective in enhancing the knowledge of Group-D staff would help to recognize and protect Group-D staff would help to recognize and protect Group-D staff from Occupational health hazards.

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