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# A Study to Develop and Evaluate the Effectiveness of Educational Package on Prevention and Management of Occupational Health Problems in Terms of Knowledge and Practices among Thermal Power Plant Workers in Selected Thermal Power Plant of Jharkhand

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## ABSTRACT

**Introduction**: Occupational health is a branch of community medicine which deals with the effect of occupation or workplace in human health. Every occupation is associated with one or other ill effects of health. Occupational health is to provide a safe occupational environment in order to safe guard the health of the workers.

Every life needs to be cherish and every life can make a contribution to society. Sickness weakens the body. To gain strength we have to be cautious during the work, because prevention is better than cure [1].

**Objectives:**1) Develop an educational package on prevention and management of occupational health problems in the thermal powerplant. 2) Assess and evaluate the knowledge and practice of thermal powerplant workers regarding prevention and management of occupational health problems before and after administration of the educational package. 3) Determine the relationship between knowledge and practice regarding prevention and management of occupational health problems among thermal powerplant workers after administration of educational package. 4) Seek association between knowledge and practice score regarding prevention and management of occupational health problem among thermal powerplant workers after administration of educational package with the selected variables (Age, Sex, Educational qualification, Year of working experiences, Area of work, Monthly income). 5) Determine the acceptability and utility of educational package on prevention and management of occupational health.

**Methods:** Experimental approach with one group pre -test post-test design were used. The research setting was T.T.P.S, Jharkhand. The sample comprised of 80. Convenient sampling method was used. The independent variable in the study was educational package and dependent variable were knowledge and practice of thermal powerplant workers. The tool used for data collection is structured knowledge questionnaire, practice rating scale and structured opinionnaire to assess knowledge, practice's, utility and acceptability of educational package was used.

**Result:** Educational package was effective in enhancing the knowledge and practice of thermal powerplant workers. Mean post-test knowledge score (25.2) was higher than mean pre-test knowledge score (15.54) suggesting that there was significant increase level of knowledge of thermal powerplant worker and mean post-test practice score (49.31) is higher than mean pre-test practice score (34.76) suggesting that there was significant increase level of practice of thermal powerplant workers after educational package. There was a positive correlation (0.47) between knowledge and practice.

***KEYWORDS:*** *Effectiveness of Educational Package, Occupational Health, Knowledge, Practices, Workers, Thermal Powerplant, Jharkhand*

## INTRODUCTION

Occupational health deals with all the aspect of health and safety in the workplace and has a strong focus on primary prevention of hazards. The health of the workers has several determinants, including risk factors at the workplace leading to cancers, accidents, musculoskeletal disease, respiratory disease, hearing loss, circulatory disease, stress related disorders, communicable and others.[2]

India being a developing nation is faced with traditional public health problems like communicable diseases, malnutrition, poor environmental sanitation and inadequate medical care. However, globalization and rapid industrial growth in the last few years has resulted in emergence of occupational health related issues. The major occupational diseases/morbidity of concern in India are silicosis, Musculo-skeletal injuries, coal workers' pneumoconiosis, chronic obstructive lung diseases, asbestosis, byssinosis, pesticide poisoning and noise induced hearing loss, with the turn of the century, the air pollution is the second biggest risk factor for disease in India. Jharkhand is a mineral bearing State in India and history of mining and processing of metallic and non-metallic minerals are 300 years old. More than 15,000 mines of different minerals, coal, copper, iron, quartz, granite, bauxite and uranium and several thousand related industries are currently operational. The status of coal as the dominant energy source for the thermoelectrical power plants in India[3].

## BACKGROUND

In present scenario for any industry to be successful it should meet not only the production requirements but also maintain the safety standards for all concerned. The coal fired thermal power plant susceptible to a wide range of hazards in its various operational areas. Hazard identification and risk assessment is systematic approach to protect the health and minimize danger to life, property and environment. Thermal power plant has caused environmental impacts at all stages of the process in the area. It also caused various occupational diseases and injuries to the workers working. Each Occupational disease and injury has a major effect on economy due to loss of productive hour, man-power losses, compensation to the victim's. Due to this reason for reduction of all occupational diseases, injuries/fatalities, corrective and preventive measures should be done.

In 2015, there were 2.4 million deaths due to fatal work-related diseases, an increase of 0.4 million compared to 2011. In total, it is estimated that more than 7,500 people die every day 1,000 from occupational accidents and 6,500 from work-related diseases. The rate of fatal occupational accidents increased slightly. The number of non-fatal occupational accidents was estimated to be 374 million, increasing significantly from 2010. The main reason was that a higher under-reporting estimate was used compared to the previous estimates. [4] As shows in table 1.1.

**Table 1.1 - Global trend of occupational accident and fatal work-related disease (1998-2015)**

| Year | Fatal Occupational Accidents | | Non-fatal Occupational Accidents At least 4 days absence | | Fatal Work-Related Disease |
|---|---|---|---|---|---|
| | Number | Rate[a] | Number | Rate[a] | |
| 1998 | 345,436 | 16.4 | 263,621,966 | 12,534 | |
| 2000 | | | | | 2,028,003 |
| 2001 | 351,203 | 15.2 | 268,023,272 | 12,218 | |
| 2002 | | | | | 1,945,115 |
| 2003 | 357,948 | 13.8 | 336,532,471 | 12,966 | |
| 2008 | 320,580 | 10.7 | 317,421,473 | 10,612 | 2,022,570 |
| 2010 | 352,769 | 11.0 | 313,206,348 | 9,786 | |
| 2011 | | | | | 1,976,021 |
| 2014 | 380,500 | 11.3 | 373,986,418 | 11,096 | |
| 2015 | | | | | 2,403,965 |

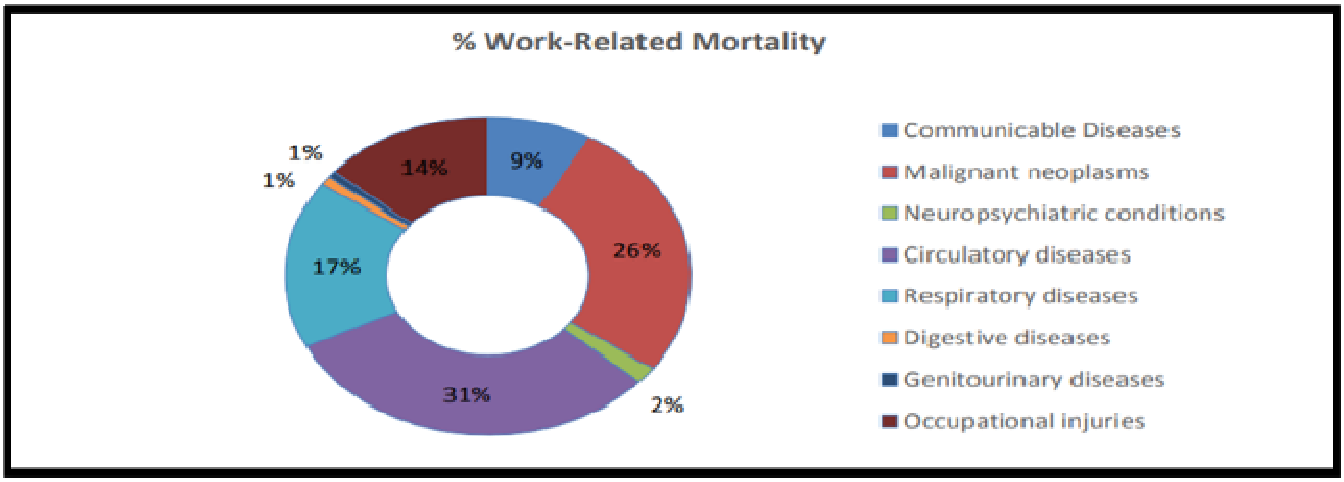


**Figure 1.1 - Breakdown of the estimated fatal work related mortality in 2015.[10]**

Figure 1.1, the main causes of death from work-related diseases maximum were having circulatory diseases (31%), (26%) were work-related cancers, (17%) were respiratory diseases and (14%) were occupational injuries. They formed about 90% of all fatal work-related deaths.

## ASSUMPTIONS

- Educational package on prevention and management of occupational health problems will helps to improve knowledge and practice among thermal powerplant workers.
- Structured knowledge questionnaire will be able to measure the knowledge of thermal powerplant workers regarding prevention and management of occupational health problems.
- Practice rating scale will be able to measure the practice of thermal powerplant workers regarding prevention and management of occupational health problems.

## METHODOLOGY

## SCHEMATIC REPRESENTATION OF RESEARCH DESIGN

**TABLE- 3.1**

| DAY1 | DAY 1 | DAY 8 |
|---|---|---|
| Pre-test to assess knowledge and practice regarding prevention and management of occupational health problem | Administration of educational package on prevention and management of occupational health problem | Post-test to assess knowledge and practice regarding prevention and management of occupational health problem Acceptability and utility of educational package |

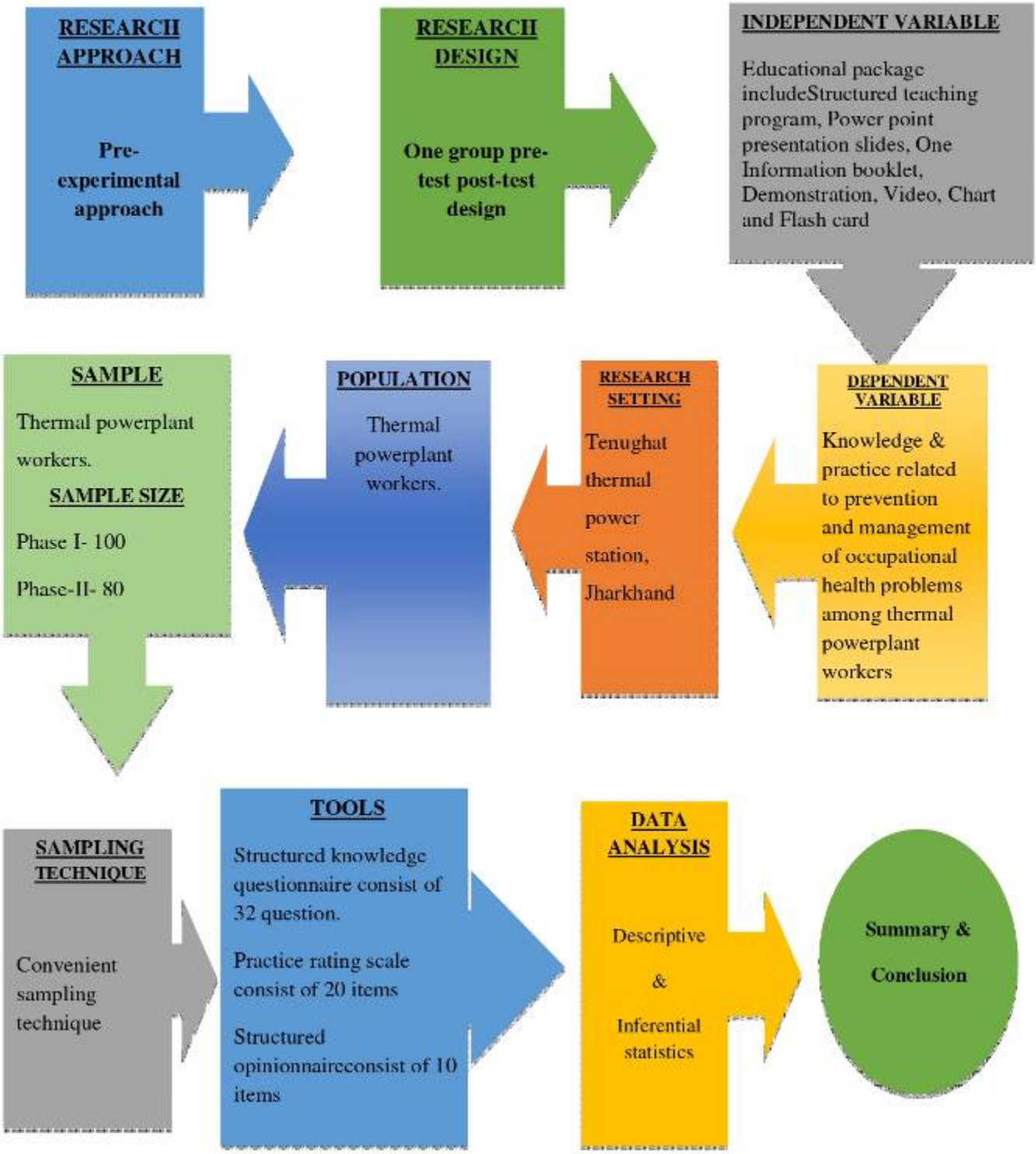


**Figure 5 RESEARCH METHODOLOGY**

## ANALYSIS AND INTERPRETATION

**Major finding of the study were summarized as following**

1. **FINDING RELATED TO SAMPLE DEMOGRAPHIC CHARACTERISTICS:-** Maximum thermal powerplant workers 42% were in age group of 51-60 years**,** Majority of the sample 92% were male, With respect to the marital status 94% were married, With respect to educational status majority of thermal powerplant workers 32.5% were (ITI), diploma, 30% were graduated.**,** Considering to area of work 27.5% were working in the coal handling plant, 21.25% were in water treatment plant, Regarding monthly income, majority of the samples 58.75 % has a monthly income of 41001 -50000
2. **FINDING RELATED TO EVALUATION OF EFFECTIVENESS OF EDUCATIONAL PACKAGE ON PREVENTION AND MANAGEMENT OF OCCUPATIONAL HEALTH PROBLEM IN TERMS OF KNOWLEDGE AMONG THERMAL POWERPLANT WORKERS.**

The mean, median, standard deviation of pre-test and post- test knowledge score and 't' value to find significant of mean difference between mean post-test knowledge score were calculated.

The data were organised with the sequence of :

A. Mean, Median, Standard deviation of pre-test and post- test knowledge score of thermal powerplant workers.
B. Frequency and percentage distribution of pre-test and post-test knowledge score of the thermal powerplant workers.
C. Compute the 't' value to find out the significance of mean difference between pre-test and post-test knowledge score of the thermal powerplant workers.

**TABLE- 2a MEAN, MEDIAN, STANDARD DEVIATION OF PRE-TEST AND POST- TEST KNOWLEDGE SCORE ON PREVENTION AND MANAGEMENT OF OCCUPATIONAL HEALTH PROBLEM**

**N=80**

| S. NO | KNOWLDEGE SCORE | MEAN | MEDIAN | STANDARD DEVIATION |
|---|---|---|---|---|
| 1. | **PRE-TEST** | 15.54 | 15 | 2.93 |
| 2. | **POST-TEST** | 25.2 | 26 | 2.56 |

**MAXIMUM POSSIBLE SCORE IS =32**

Thedata given in table 4.7 and figure 4.32 shows that the mean post-test knowledge score of thermal powerplant workers on prevention and management of occupational health problem is higher **(25.2)** than the mean of pre-test knowledge score **(15.54).** It shows the effectiveness of the educational package. The data furthers shows that the median for the pre-test was 15 and whereas for the post -test was 26, which both are closer to the pre-test mean 15.54 and post-test mean 25.2 respectively, indicating a fairly normal probability curve, which means all the measures of central tendency coincide at the centre of the distribution to a great extent. The standard deviation of post-test knowledge score is (2.56) is lower than the standard deviation of pre-test knowledge score (2.93) suggesting an equal and homogenous grasping of knowledge after the administration of the educational package.

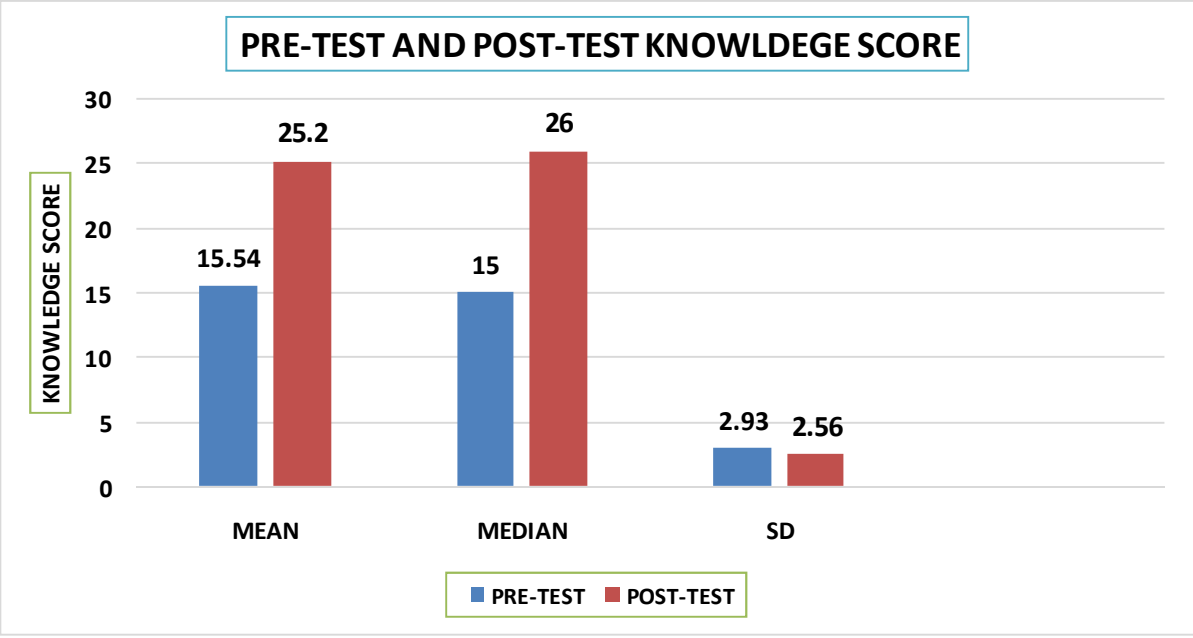


**Figure 1:- The column diagram showing mean, median and standard deviation of pre-test and post-test knowledge score of thermal powerplant workers.**

**TABLE – 2 (b).1 CLASS INTERVAL, PERCENTAGE DISTRIBUTION OF PRE-TEST AND POST-TEST KNOWLEDGE SCORE OF THE THERMAL POWERPLANT WORKERS.**

**N=80**

| CLASS INTERVAL | PERCENTAGE DISTRIBUTION OF PRE-TEST KNOWLDEGE SCORE | PERCENTAGE DISTRIBUTION OF POST-TEST KNOWLDEGE SCORES |
|---|---|---|
| **0-8** | 0 | 0 |
| **9-16** | 51 | 0 |
| **17-24** | 29 | 25 |
| **25-32** | 0 | 55 |

**MAXIMUM POSSIBLE SCORE 32**

The data given in table 4.8 and figure 4.33 shows the pre-test and post-test knowledge score of thermal powerplant workers on prevention and management of occupational health problem. The frequency interval of pre-test knowledge score started from 9-16 and highest pre-test knowledge frequency score was 51 for class interval 9-16. Whereas post-test knowledge score started from class interval 17-24 and the highest post-test knowledge frequency score was 55 for the class interval 25-32.

The comparison between the pre-test and post-test knowledge score of the thermal power-plant workers was plotted in the form of frequency polygon in the figure 4.33 andit is evident the mean and median fall close to each other in both pre-test and post-test knowledge score suggesting the distribution close to normal. This suggest that educational package on the prevention and management of occupational health problems was effective in enhancing the knowledge of the thermal powerplant workers.

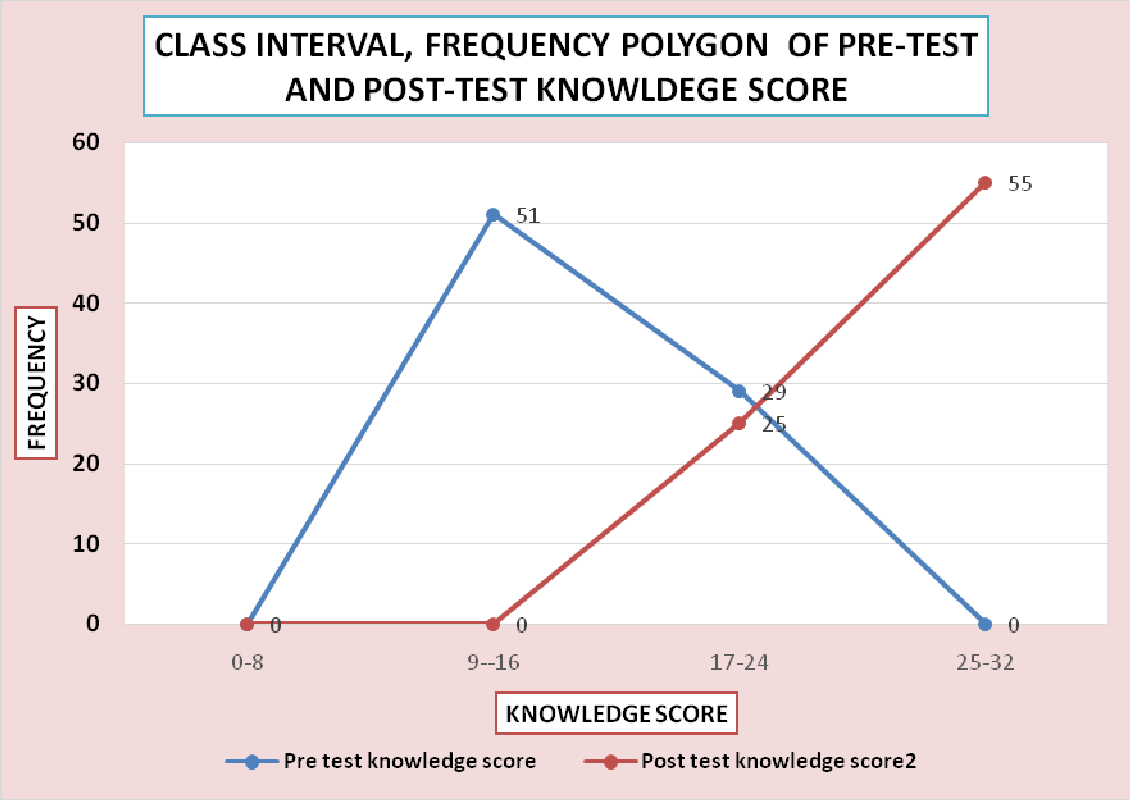


**Figure 4.33 - The frequency polygon showing pre-test and post-test knowledge score of thermal powerplant workers.**

**TABLE – 2 (b) 2 FREQUENCY AND PERCENTAGE DISTRIBUTION OF PRE-TEST AND POST-TEST KNOWLEDGE SCORE OF THE THERMAL POWERPLANT WORKERS ACCORDING SCORING CRITERION**

**N=80**

| KNOWLDEGE SCORE CATEGORIES | PRE-TEST | | POST-TEST | |
|---|---|---|---|---|
| | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE |
| **POOR(0-8)** | 0 | 0 | 0 | 0 |
| **AVERAGE(9-16)** | 51 | 63.75% | 0 | 0 |
| **GOOD(17-24)** | 29 | 36.25% | 25 | 31.25% |
| **EXCELLENT(25-32)** | 0 | 0 | 55 | 68.75% |

*Maximum possible score: 32

The data presented in the table 4.9 and figure 4.34 shows that the frequency of score of the thermal powerplant workers. In the pre-test knowledge score 51 (63.75%) were in the average categories and 29 (36.25%) in the good knowledge whereas in the post-test knowledge increased form 00 (0%) to 55 (68.75%) in the excellent categories. This suggest that the majority of the thermal powerplant workers score were under good and excellent category after the intervention. So, it suggest that educational package was effective in increasing the knowledge of the thermal powerplant workers.

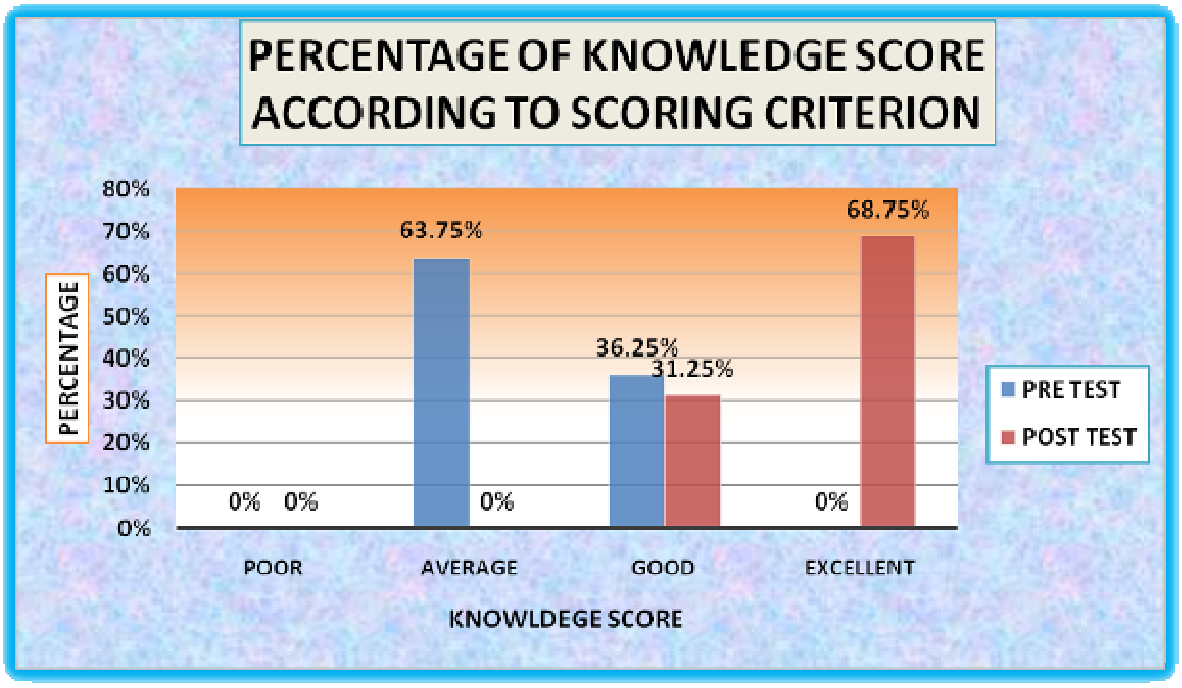


**Figure 4.34 - The bar diagram showing percentage distribution of the pre-test and post-test knowledge score of thermal powerplant workers according to scoringrange.**

**TABLE- 2 (c) MEAN, MEAN DIFFERENCE, STANDARD ERROR OF MEAN DIFFERENCE, t VALUE OBTAINED AND 't' VALUE FROM TABLE.**

**N=80**

| S. NO | KNOWLDEGE TEST | MEAN | SD | MEAN DIFFERENCE | $SD_d$ | $S_{EMD}$ | 't' value |
|---|---|---|---|---|---|---|---|
| 1 | **PRE-TEST** | 15.54 | 2.93 | 9.66 | 0.37 | 0.393 | 24.58* |
| 2. | **POST-TEST** | 25.2 | 2.56 | | | | |

*** 't' value for df (79) level=1.98,P<0.05= significant at 0.05 level**

The data presented in table 4.11 shows that the mean post-test knowledge scores(25.2) is higher than the mean pre-test knowledge score(15.54) with a mean difference of (9.66). The calculated "t" value (24.58) is higher than the table t value (1.98) for the df 79 and it was found statistically significant at 0.05 level of significant. Therefore the obtained mean difference was a true difference and not by chance so the research hypothesis **$H_1$ was accepted and null hypothesis $H_{01}$ is rejected**. The shows that the educational package was effective in enhancing the knowledge of thermal powerplant workers regarding prevention and management of occupational health problem in thermal powerplant.

## 3. FINDING RELATED TO EVALUATION OF EFFECTIVENESS OF EDUCATIONAL PACKAGE ON PREVENTION AND MANAGEMENT OF OCCUPATIONAL HEALTH PROBLEM IN TERMS OF PRACTICE AMONG THERMAL POWERPLANT WORKERS.

The mean, Median, Standard deviation of pre-test and post- test practice score and 't' value to find significant of mean difference between mean post-test practice score were calculated.

**The data were organised with the sequence of**

A. Mean, Median, Standard deviation of pre-test and post- test practice score of thermal powerplant workers.
B. Frequency and percentage distribution of pre-test and post-test of practice score of the thermal powerplant workers.
C. Compute the 't' value to find out the significance of mean difference between pre-test and post-test practice score of the thermal powerplant workers

**TABLE- 3 (a) MEAN, MEDIAN, STANDARD DEVIATION OF PRE-TEST AND POST- TEST PRACTICE SCORE OF THERMAL POWERPLANT WORKERS.**

**N=80**

| S.NO | TEST | MEAN | MEDIAN | STANDARD DEVIATION |
|---|---|---|---|---|
| 1. | PRE-TEST | 34.76 | 34 | 2.86 |
| 2. | POST-TEST | 49.31 | 51 | 4.41 |

**MAXIMUM POSSIBLE SCORE IS =60**

Thedata table 4.12 and 4.36 shows that the mean post-test practice score of thermal powerplant workers on prevention and management of occupational health problem is higher (49.31) than the mean of pre-test practice score (34.76)**.** This shows that effectiveness of the educational package in improving the practice of the thermal powerplant workers.

The median for the pre-test was 34 and whereas for the post-test was 51, which both are closer to the pre-test mean 34.76 and post-test mean 49.31 respectively, indicating a fairly normal probability curve, which means all the measures of central tendency coincide at the centre of the distribution to a great extent.The standard deviation of post-test practice score is (4.41) is higher than the standard deviation of pre-test practice score (2.86) suggesting an unequal and heterogenous grasping of practice after the administration of the educational package.

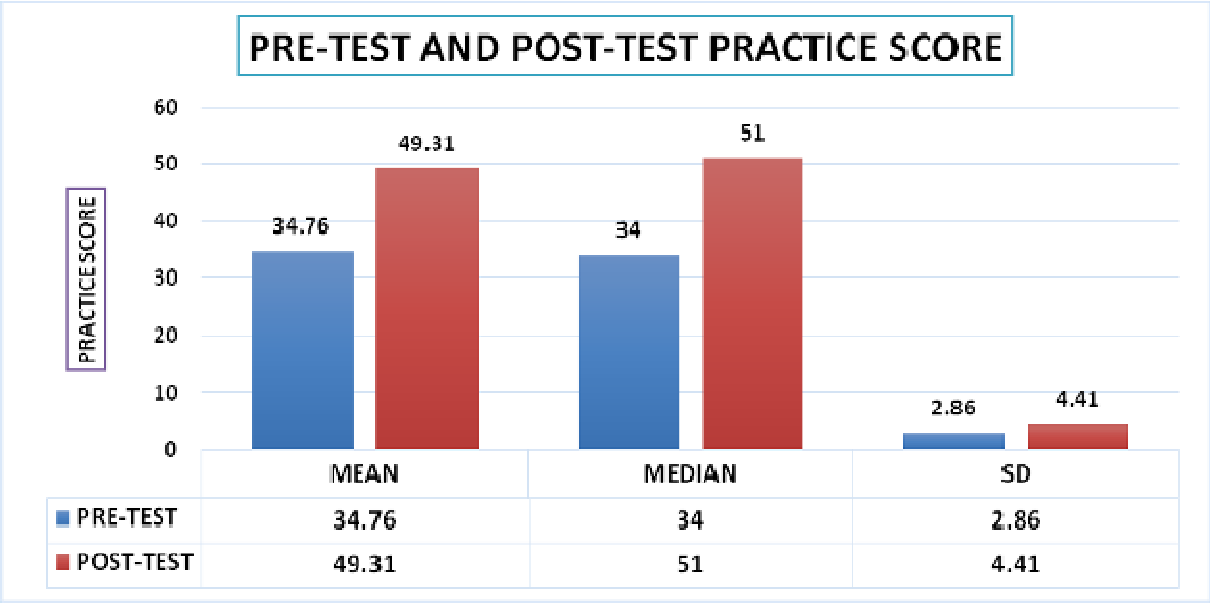


**Figure 4.36 -The column diagram showing mean, median and standard deviation of pre-test and post-test practice score of thermal powerplant workers.**

**TABLE –3 (b).1 CLASS INTERVAL, PERCENTAGE DISTRIBUTION OF PRE-TEST AND POST-TEST OF PRACTICE SCORE OF THE THERMAL POWERPLANT WORKERS**

**N=80**

| CLASS INTERVAL | PERCENTAGE DISTRIBUTION OF PRE-TEST OF PRACTICE SCORE | PERCENTAGE DISTRIBUTION OF POST-TEST SELF-EXPRESSED PRACTICE SCORES |
|---|---|---|
| 20-30 | 2 | 0 |
| 31-40 | 75 | 5 |
| 41-50 | 3 | 34 |
| 51-60 | 0 | 41 |

**Maximum possible score: 60**

The data given in table 4.13 and figure 4.37 shows the pre-test and post-test practice score of thermal powerplant workers. The pre-test practice score of thermal powerplant workers, the most of the score was in range of (31-40). Whereas in post-test practice, the maximum score was in the range of (51-60).

The comparison between the pre-test and post-test practice score of the thermal power-plant workers was plotted in the form of frequency polygon in the figure 4.37 and it is evident the mean and median fall close to each other in both pre-test and post-test practice score suggesting the distribution close to normal which suggest that educational package on the prevention and management of occupational health problems was effective in enhancing the practice of the thermal powerplant workers.

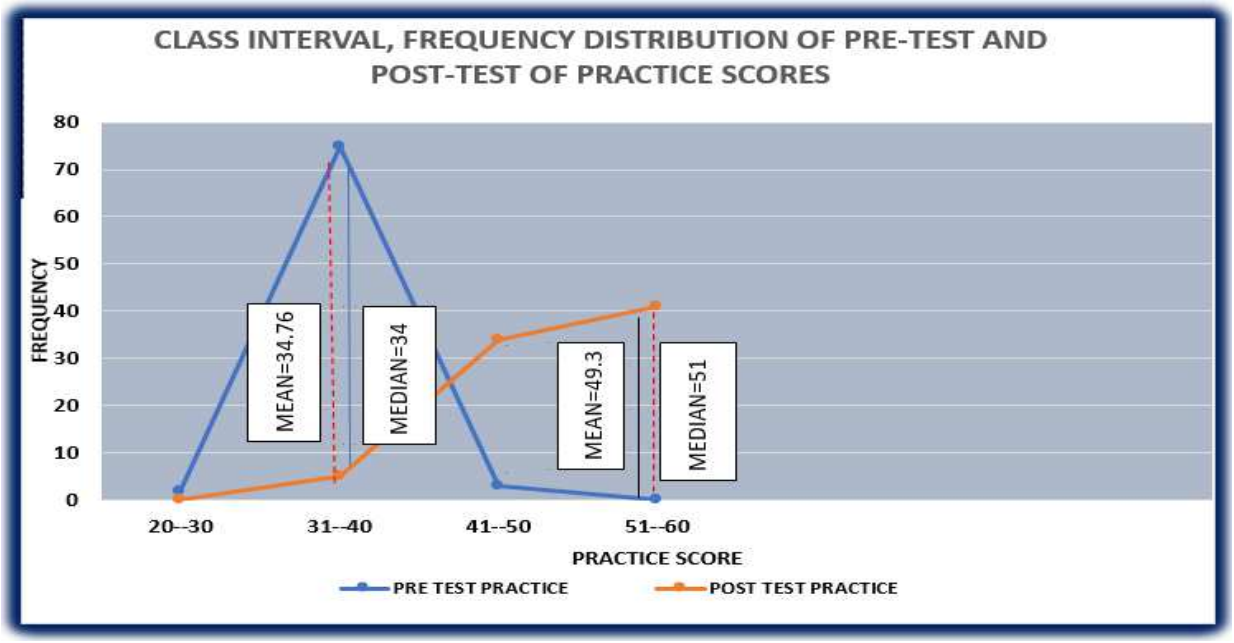


**Figure 4.37 - The frequency polygon showing pre-test and post-test practice score. The frequency polygon showing pre-test and post-test practice score of thermal powerplant workers**

**TABLE – 3 (b).2 FREQUENCY AND PERCENTAGE DISTRIBUTION OF PRE-TEST AND POST-TEST PRACTICE SCORE OF THE THERMAL POWERPLANT WORKERS ACCORDING SCORING CRITERION**

**N=80**

| PRACTICE SCORE CATEGORIES | PRE-TEST | | POST-TEST | |
|---|---|---|---|---|
| | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE |
| POOR(20-30) | 2 | 2.5% | 0 | 0% |
| AVERAGE(31-40) | 75 | 93.75% | 5 | 6.25% |
| GOOD(41-50) | 3 | 3.75% | 34 | 42.5% |
| EXCELLENT(51-60) | 0 | 0% | 41 | 51.25% |

Maximum possible score: 60

The data presented in the table - 4.14 and figure 4.38 shows that frequency of score of the thermal powerplant workers in pre-test practice score (93.75%) were in the average categories, 3.75% in good and 2.5% in poor categories. Whereas in the post-test practice score was increased form 00(0%) to 51.25% in excellent categories and form 3.75% to 42.50% in good categories. This suggest that majority of the thermal powerplant workers improved the practice after administration of the educational package.

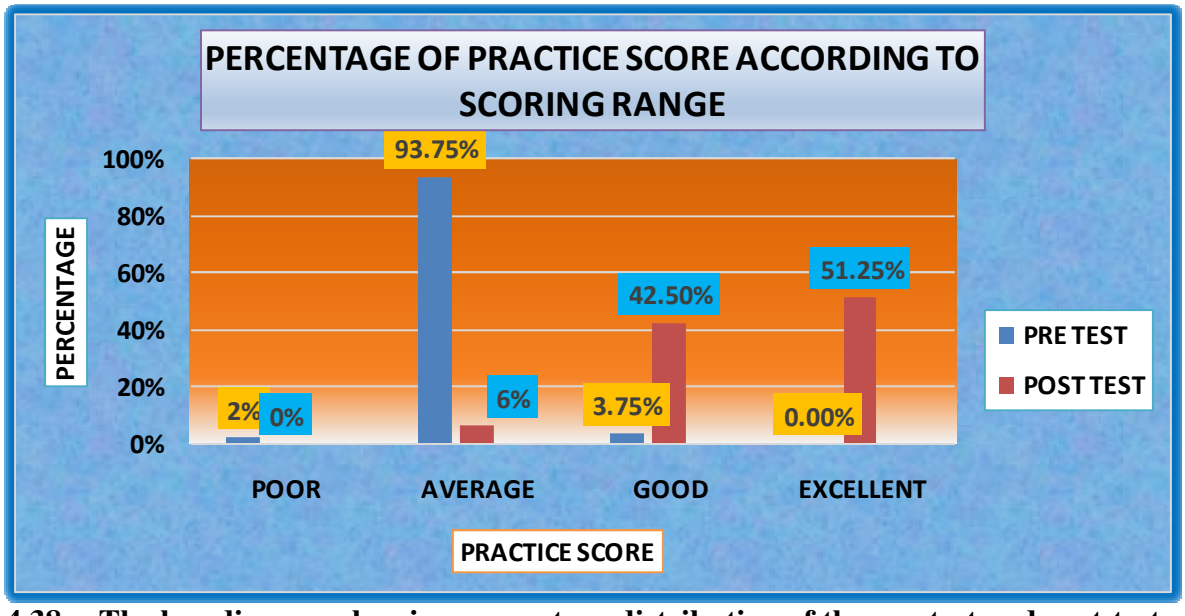


**Figure 4.38 :- The bar diagram showing percentage distribution of the pre-test and post-test practice score of thermal powerplant workers according to scoring range.**

**TABLE- 3 (c) MEAN, MEAN DIFFERENCE, STANDARD ERROR OF MEAN DIFFERENCE AND 't' VALUE OBTAINED OF PRE AND POST TEST PRACTICE SCORE.**

**N=80**

| PRACTICE TEST | MEAN | SD | MEAN DIFFERENCE | SDd | $S_{EMD}$ | 't' value |
|---|---|---|---|---|---|---|
| PRE-TEST | 34.76 | 2.86 | 14.55 | 1.55 | 0.526 | 27.66 |
| POST-TEST | 49.31 | 4.41 | | | | |

**'t' value for df (79) level=1.98, P<0.05= significant at 0.05 level**

The data presented in table 4.16 shows that the mean post-test practice scores (49.31) was higher than the mean pre-test practice score (34.76) with a mean difference of (14.55). The calculated "t" value (27.66) is higher than the Table No " t" value (1.98) for df 79 and it was found statistically significant at 0.05 level of significance. Therefore the obtained mean difference was a true difference and not by chance so the research hypothesis $H_2$ was accepted and null hypothesis $H_{02}$ was rejected. The shows that the educational package was effective in enhancing the practice of thermal powerplant workers regarding prevention and management of occupational health problem in thermal powerplant.

**4. FINDING RELATED TO RELATIONSHIP BETWEEN POST-TEST KNOWLEDGE AND POST-TEST PRACTICE SCORE ON PREVENTION AND MANAGEMENT OF OCCUPATIONAL HEALTH PROBLEM**

**TABLE- 4.17 THE MEAN, STANDARD DEVIATION AND KARL PEARSON COEFFICIENT OF CORRELATION BETWEEN POST-TESTKNOWLEDGE AND POST-TEST PRACTICE SCORE OF THERMAL POWERPLANT WORKERS**

**N=80**

| VARIABLE | MEAN | SD | ' r' VALUE |
|---|---|---|---|
| POST-TEST KNOWLDEGE SCORE | 25.2 | 2.56 | 0.47* |
| POST-TEST PRACTICE SCORE | 49.31 | 4.41 | |

***Significant at 0.05 level of significance at df (78) "r"=0.217**

The data presented in table 4.17 shows that there was a positive correlation (0.47) between the post-test knowledge score and post-test practice score on prevention and management of occupational health problem which is found more than the table "r" value (0.217) for the df 78 at 0. 05 level.

Therefore research hypothesis $H_3$ is accepted and null hypothesis $H_{03}$ was rejected which shows that there is direct relationship between knowledge and practice on the prevention and management of occupational health problem i.e. when knowledge increases practice also increases.

**5. FINDING RELATED TO ASSOCIATION BETWEEN POST-TEST KNOWLEDGE SCORE OF THERMAL POWERPLANT WORKERS AND SELECTED VARIABLES.**

**TABLE –4.18 CHI-SQUARE VALUE SHOWING ASSOCIATION BETWEEN POST TEST KNOWLEDGE SCORE AND SELECTED VARIABLES AFTER ADMINISTRATION OF EDUCATIONAL PACKAGE**

**N=80**

| S. NO | ASSOCIATED FACTORS | KNOWLDEGE SCORE | | Df | Chi square calculated | Chi square table value | Significant /Non-significant |
|---|---|---|---|---|---|---|---|
| | | ABOVE MEDIAN | BELOW MEDIAN | | | | |
| 1. | **AGE** | | | | | | |
| 1.1 | 20-30 Years | 8 | 6 | 3 | 5.43 | 7.82 | **Non-significant** |
| 1.2 | 31-40 years | 3 | 10 | | | | |
| 1.3 | 41-50 years | 9 | 11 | | | | |
| 1.4 | 51-60 years | 9 | 24 | | | | |
| 2. | **SEX** | | | | | | |
| 2.1 | Male | 26 | 48 | 1 | 1.38 | 3.84 | **Non-significant** |
| 2.2 | Female | 3 | 3 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | **EDUCATIONAL QUALIFICATION** | | | | | | |
| 3.1 | 12th pass | 7 | 11 | 4 | 5.04 | 9.49 | **Non-significant** |
| 3.2 | ITI (Diploma) | 12 | 14 | | | | |
| 3.3 | Graduation | 6 | 18 | | | | |
| 3.4 | Engineers | 4 | 5 | | | | |
| 3.5 | Others | 3 | 1 | | | | |
| 4. | **YEAR OF EXPERIENCE** | | | | | | |
| 4.1 | 0-5 YEARS | 4 | 6 | 3 | 3.45 | 7.82 | **Non-significant** |
| 4.2 | 6-10 YEARS | 10 | 3 | | | | |
| 4.3 | 11-15 YEARS | 19 | 10 | | | | |
| 4.4 | 16-20 YEARS | 18 | 10 | | | | |
| 5. | **AREA OF WORK** | | | | | | |
| 5.1 | Coal handling plant | 4 | 18 | 4 | 4.98 | 9.49 | **Non-significant** |
| 5.2 | Turbine | 6 | 7 | | | | |
| 5.3 | Water treatment plant | 7 | 10 | | | | |
| 5.4 | Electrical maintenance | 5 | 9 | | | | |
| 5.5 | Boiler | 7 | 7 | | | | |
| 5.6 | Any others | | | | | | |
| 6. | **MONTHLY INCOME** | | | | | | |
| 6.1 | < Rs.30000 | 2 | 4 | 3 | 0.37 | 7.82 | **Non-significant** |
| 6.2 | Rs.30000-Rs.40000 | 8 | 12 | | | | |
| 6.3 | Rs. 41000- Rs. 50000 | 16 | 31 | | | | |
| 6.4 | > Rs. 50000 | 3 | 4 | | | | |

***Significance at 0.05 level of significance**

The data presented in the table- 4.18 shows the computed chi-square value between the selected variable and knowledge score of the thermal powerplant workers. The computed chi-square value of selected variable like age (1.38), sex (0.53), educational qualification (5.04), year of experience (3.45), area of work (4.98), monthly income (0.37) were found to be statistically non-significant at 0.05 level of significance.

Hence, research hypothesis $H_4$ is rejected and null hypothesis $H_{04}$ is failed to reject. This indicate that knowledge was independent on its own and not influenced by age, sex, educational qualification, year of experience, area of work and monthly income.

## 6. FINDING RELATED TO ASSOCIATION BETWEEN POST-TEST PRACTICE SCORE OF THERMAL POWERPLANT WORKERS AND SELECTED VARIABLES.

**TABLE -4.19 CHI-SQUARE VALUE SHOWING ASSOCIATION BETWEEN PRACTICE SCORE AND SELECTED VARIABLES AFTER ADMINISTRATION OF EDUCATIONAL PACKAGE ON PREVENTION AND MANAGEMENT OF OCCUPATIONAL HEALTH PROBLEM.**

**N=80**

| S. NO | ASSOCIATED FACTORS | PRACTICE SCORE | | df | Chi square calculated | Chi square table value | Significant /Non-significant |
|---|---|---|---|---|---|---|---|
| | | ABOVE MEDIAN | BELOW MEDIAN | | | | |
| 1. | **AGE** | | | | | | |
| 1.1 | 20-30 Years | 8 | 7 | 3 | 3.69 | 7.82 | Non-significant |
| 1.2 | 31-40 years | 6 | 7 | | | | |
| 1.3 | 41-50 years | 14 | 6 | | | | |
| 1.4 | 51-60 years | 23 | 9 | | | | |
| 2. | **SEX** | | | | | | |
| 2.1 | Male | 48 | 26 | 1 | 1.38 | 3.84 | Non-significant |
| 2.2 | Female | 3 | 3 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | **EDUCATIONAL QUALIFICATION** | | | | | | |
| 3.1 | 12th pass | 11 | 5 | 4 | 7.39 | 9.49 | Non-significant |
| 3.2 | ITI (Diploma) | 20 | 6 | | | | |
| 3.3 | Graduation | 15 | 9 | | | | |
| 3.4 | Engineers | 3 | 7 | | | | |
| 3.5 | Others | 2 | 2 | | | | |
| 4. | **YEAR OF EXPERIENCE** | | | | | | |
| 4.1 | 0-5 YEARS | 5 | 5 | 3 | 2.93 | 7.82 | Non-significant |
| 4.2 | 6-10 YEARS | 7 | 6 | | | | |
| 4.3 | 11-15 YEARS | 18 | 11 | | | | |
| 4.4 | 16-20 YEARS | 21 | 7 | | | | |
| 5. | **AREA OF WORK** | | | | | | |
| 5.1 | Coal handling plant | 16 | 6 | 4 | 1.96 | 9.49 | Non-significant |
| 5.2 | Turbine | 8 | 5 | | | | |
| 5.3 | Water treatment plant | 11 | 6 | | | | |
| 5.4 | Electrical maintenance | 7 | 7 | | | | |
| 5.5 | Boiler | 9 | 5 | | | | |
| 6 | **MONTHLY INCOME** | | | | | | |
| 6.1 | < Rs.30000 | 4 | 2 | 3 | 6.481 | 7.84 | Non-significant |
| 6.2 | Rs.30000- Rs 40000 | 7 | 13 | | | | |
| 6.3 | Rs. 41000- Rs.50000 | 18 | 29 | | | | |
| 6.4 | >Rs. 50000 | 0 | 7 | | | | |

***Significance at 0.05 level of significance**

The data presented in the above table 4.19 shows the computed chi-square value between the selected variable and practice score of the thermal powerplant workers. The computed chi-square value of selected variable like age (3.69), sex (1.38), educational qualification (7.39), year of experience (2.93), area of work (1.96), monthly income (6.48) were found to be statistically non-significant at 0.05 level of significance. Hence, research hypothesis $H_5$ is rejected and null hypothesis $H_{05}$ is failed to reject. This indicate that practice was independent on its own and not influenced by age, sex, educational qualification, year of experience, area of work and monthly income.

## 7. FINDING RELATED TO ACCEPTABILITY AND UTILITY OF THE EDUCATIONAL PACKAGE ON THEPREVENTION AND MANAGEMENT OF OCCUPATIONAL HEALTH PROBLEM

Maximum 81% of thermal powerplant workers accepted the educational package in the prevention and management of occupational health problem as to great extent.

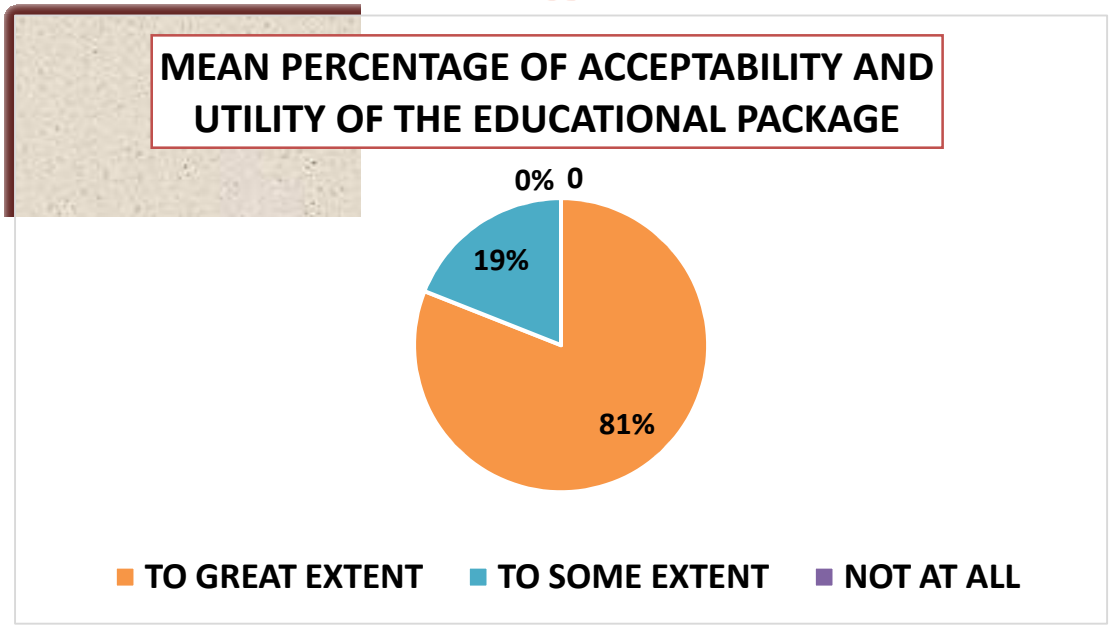


**Figure 4.40 - The pie diagram showing mean percentage of acceptability and utility response on the structuredopinionnaire.**

## CONCLUSION

The thermal powerplant workers were deficit in terms of knowledge and practice regarding the prevention and management of occupational health problem. The educational package was effective in improving knowledge and practice of thermal powerplant workers regarding prevention and management of occupational health problem.There was a positive correlation between post-test knowledge score and post-test practice score of thermal powerplant workers regarding prevention and management occupational health problem, which shows that as the knowledge scores increases, the practice also get increased. The knowledge and practice score of thermal powerplant workers were independent of the selected variable i.e. age, sex, educational qualification, working experience and monthly income on prevention and management of occupational health problem. There was statistically significant relationship between knowledge and practice score of thermal powerplant workers after administration of the educational package on the prevention and management of occupational health problems. The thermal powerplant workers accepted the educational package as a great extent.

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