



# A STUDY TO ASSESS THE EFFECTIVENESS OF VIDEO ASSISTED TEACHING ON KNOWLEDGE AND PRACTICE REGARDING UTILIZATION OF SAFETY MEASURES AMONG INDUSTRIAL WORKERS IN REDEMA AMBATTUR INDUSTRIAL ESTATE

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**ABSTRACT:** The importance of work serves a number of functions. It is through work that man is able to provide for his needs, work also gives man the ability to help those who are less fortunate, perhaps more importantly work gives man a reason for existing, work gives man a reason for living, through our work we gain self esteem. India is globally recognized for its industrial development; currently occupational environment in the industrialized world is challenging the health and safety of man. The risk associated with modern occupation, necessitates the adaptation of man to the industrial environment on the one hand and his protection from the risk on the other. The aim of this study is a study to assess the effectiveness of video assisted teaching on knowledge, and practice regarding utilization of safety measures among industrial workers in Redema at Ambattur Industrial Estate Chennai. **Methods** A quantitative approach was used for this study. The study was carried out in 2 unit of Redema Ambattur industrial estate. The sample comprised of 60 workers. Sample was selected by simple random sampling technique. The data collection was done from 4/06/11 to 15/07/11. Formal written permission was obtained from the authorities to conduct the study and informal consent was obtained from the workers prior to the data collection process. A self structured questionnaire schedule was used for data collection. The data was analyzed using descriptive and inferential Statistics. **Result** 1. The frequency and percentage distribution of pretest level on various aspects of knowledge in the experimental group to knowledge on noise and vibrations, majority 26(86.67%) had inadequate knowledge. in the control group to knowledge on noise and vibrations, majority 13(43.33%) each had inadequate and moderately adequate knowledge

2. The frequency and percentage distribution of pretest and post test level of practice in the experimental group. In the pretest, majority of the workers 19(63.33%) had poor practice whereas in the post test, majority 26(86.67%) had good practice on utilization of safety measures.

3. The video assisted teaching on knowledge on utilization of safety measures among workers in the experimental group had significant improvement and their knowledge increased in the post test. [ $p < 0.001$ , S – Significant]
4. The calculated 't' value of 18.250 was found to be statistically highly significant at  $p < 0.001$  level. This implies that the video assisted teaching on practice on utilization of safety measures among workers in the experimental group had significant improvement and their practice improved after the post test. [ $p < 0.001$ , S – Significant].
5. The calculated 'r' value was 0.543 which was found to statistically significant and positively correlated at  $p < 0.01$  level. This clearly indicates that when the knowledge of workers increases their practice level also increases

## INTRODUCTION

From time immemorial machinery has been in existence as human devised the fundamental invention such as the pulley, lever and wheel. Each of this invention is consistent with the modern definition of engineering, exploiting basic mechanical principles to develop useful tools and objects. Starting from the pyramids in Egypt, the hanging gardens of Babylon to the luxuries of daily living Industry has interwoven itself into human lives as an integral part.

The importance of work serves a number of functions. It is through work that man is able to provide for his needs, work also gives man the ability to help those who are less fortunate, perhaps more importantly work gives man a reason for existing, work gives man a reason for living, through our work we gain self esteem.

India is globally recognized for its industrial development; currently occupational environment in the industrialized world is challenging the health and safety of man. The risk associated with modern occupation, necessitates the adaptation of man to the industrial environment on the one hand and his protection from the risk on the other.

The workers in all occupation need to be given comprehensive health service. A worker spends more than one third of his daily life time at workplace and carries the effect caused by working conditions back to home. The family and social life also reflected in his work. The working population is one, on which the entire community is dependent. The quality of life of this section of population determines the economic security and social security of community.

## BACKGROUND OF THE STUDY:

**International Labor Organization [I.L.O 2009]** restates that the constitution sets forth the principle that workers should be protected from sickness, disease and injury arising from their employment. Yet for millions of workers the reality is very different. Some two million people die every year from work-related accidents and diseases. An estimated 160 million people suffer from work-related diseases, and there is an estimated 270 million fatal and non-fatal work-related accidents per year. The suffering caused by such accidents and illnesses to workers and their families is incalculable. In economic terms, the International labor organization (I.L.O) has estimated that 4% of the world's annual gross domestic product is lost as a consequence of occupational diseases and accidents.

**Kuzey et. al. [2010]** a descriptive cross sectional study was carried out using two hundred and fifty seven (257) workers in sawmill industries who had been in continuous employment in sawmill factories for a minimum of one year. They were selected by a multistage sampling process from sawmills in Nigeria. A semi-structured interview questionnaire was administered the majority of the respondents were wood traders, and machine operators. The occurrences of minor accidents were reported. Less than 20% of the sawmill workers used protective devices. Health and safety standards were neither practiced nor enforced. Most perceived occupational hazards in the sawmill were dust and noise among the 28.1% and 26.1% respondents respectively. The level of awareness of various occupational hazards was low except that of electric shock that was high. The most common health problems experienced was minor accidents. Availability and use of safety devices were also poor.

**Usha Vasu [2008]** revealed the statistics from an ophthalmology department at a private College Hospital Bangalore, India severe injuries were injuries were reported from various industrial sectors (12.5%) of patients in the agricultural sector, (87.5%) in the mining industry, (52.63%) were from the iron and steel industry and (12.5%) patients belonged to the small-scale industry. The injuries were mild to moderate in the agricultural sector, moderate in small-scale industry, moderate to severe in the iron and steel sector and severe in the mining industry. Of the 10 patients wearing recommended industrial eye protection, (10%) of the patient suffered severe injury, (50%) had moderate injuries and (40%) had mild injuries. Of the 30 patients not wearing protective eyewear, (60%) sustained severe injury, and (40%) had moderate injury

## NEED FOR THE STUDY

The occupational accident is a major cause for every industry especially in mechanical industry. In the early part of this century ‘pulley’ reported that workers with increased occupational injury tend to die prematurely. Accidents and injuries recently have become major health problems. Injury related deaths occur in many actively working people and it produces the major social and economic losses, permanent disfigurement and family stress. The importance of work place safety cannot be understated. The safety of employees affects the morale of attendance and workman’s compensation. Organization and agencies have to provide guidelines to ensure safety of the employees and to prevent the accidents. The employees should have in depth knowledge and also practice safety measures while they carelessly work in the mechanical industries. The purposes of this study was to determine the effectiveness of video assisted teaching on knowledge, and practice regarding utilization of safety measures among industrial workers in Redema at Ambattur Industrial Estate Chennai. The nature work of this industry is maintenance and repairing of heavy machine, preparing tools and welding the machines. The annual statistics of in this industry accident is 15 cases affected for and in which are being registered and 25 were the total number of occupational hazards for year of 2010.

## RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. It deals with defining the problem, formulation of hypotheses, methods adopted for data collection and statistics techniques used for analyzing the data with logical reason behind it. The study was conducted with the purpose of assessment of knowledge and practice on utilization of safety measures among industrial workers at Redema Ambattur Industrial Estate, Chennai.

## RESEARCH APPROACH

The quantitative approach. was adopted for this study.

## RESEARCH DESIGN

A pre experimental one group pre test and post test experimental design.

GROUP	MEASUREMENT OF DEPENDANT VARIABLE	MEASUREMENT OF INDIVIDUAL	MEASUREMENT OF INDEPENDENT VARIABLE
Randomization of experimental group	O1	XXX	O2
Randomization of control group	O1	---	O2

## SETTING

The study was conducted at Redema Ambattur Industrial Estate at Chennai. The nature work of this industry is maintenance and repairing of heavy machine, preparing tools and welding the machines. The annual statistics of in this industry accident is 15 cases affected for and in which are being registered and 25 were the total number of occupational hazards for year of 2010. There are totally 300workers in this industry. There are two units are available in this industry. The Ambattur unit there were 100 workers, it consider as an experimental group and vaavin unit there were 70 workers it consider as a control group.

## POPULATION

All the industrial workers in Redema Ambattur Industrial Estate. Ambattur and Vavin unit, who had experience of less than five years, were the population for this study.

## SAMPLE

The total samples of sixty industrial workers were selected from Ambatur and Vavin unit, Redema Ambattur Industrial Estate workers who fulfilled the inclusion criteria were taken as sample for the study.

## SAMPLE TECHNIQUE

Probability simple random sampling technique (lottery method).

**CRITERIA FOR SAMPLE SELECTION:****a. Inclusion criteria:**

- ❖ Workers who had less than five years of experience.
- ❖ Workers can understand Tamil and English.
- ❖ Workers are willing to participate in the study.

**b. Exclusion criteria:**

- ❖ Those are in managerial and administrative level.
- ❖ Workers who had injury previously.
- ❖ Workers who were on medical leave or long absenteeism.

**DESCRIPTION OF TOOLS:**

The following tools were used for the present study;

1. Video assisted teaching on utilization of safety measures include occupational health, hazards, injuries, using fire extinguisher and using safety devices.
2. The investigator developed the tool with the help of various resources and review of literature. The tool consists of three parts.

Part-I: It was related to the demographic data of the industrial workers. It consists of age, educational status, marital status, income, residency, experience and source of information.

Part-II: Self structured questionnaire to assess the knowledge of utilization of safety measures, by using multiple choice question which consisted of 25 questions were related to

Knowledge aspect	Number of items	Score
Occupational health and hazards	6	6
Noise and vibration	5	5
Heat and fire in industry	5	5
Mechanical injuries	3	3
Utilization of safety measures	6	6
Total	25	25

Part-III: Self structured questionnaire to assess the practice related to utilization of safety measures, by using yes or no question which consisted 15 questions were related to utilization of safety measures.

**SCORE INTERPRETATION:**

Part – II: The knowledge questionnaire consisted of 25 multiple choice questions which had five main aspects. The correct answers were given a score of one and the wrong answers were marked as zero.

Level of knowledge	Score in percentage
Inadequate knowledge	0-19%
Moderate knowledge	50-74%
Adequate knowledge	>75%

Part – III: The practice questionnaire is consisted 15 yes or no questions.

Yes-1

No-0 [11-15 Good level of practice]

[6-10 average level of practice]

[0-5 poor level of practice]

### **TESTING OF THE TOOL:**

#### **a) Validity:**

To test the validity of the structured questionnaire schedule and video assisted teaching clipping it was sent to experts from various fields such as community health nursing and community medicine. Their opinion and suggestion were taken to modify the tool and clipping.

#### **b) Reliability:**

Test retest method where coefficient correlation was tested to find out the reliability of the structured questionnaire schedule[r=0.8]. The structured questionnaire schedule was found reliable.

### **PILOT STUDY:**

Pilot study was conducted in Redema Ambattur Industrial Estate at Chennai for a period of 2 week starting from 7.3.2011 to 21.3.2011. After receiving permission from the management authority of Redema Company. The content validity was obtained from experts from the community medicine department and community health nursing department, six industrial workers who met the inclusion criteria were selected out of them three each were assigned to experimental group and three workers are control group using simple random sampling technique before data collection. The pre test was conducted by using the self structured questionnaire method for both experimental and control group. After three days the video assisted teaching program was conducted to the experimental group alone. On the last day the post test was conducted for the experimental and control groups. The results were analyzed based on the workers scores.

### **DATA COLLECTION PROCEDURE:**

#### **Stages of data collection;**

##### **Stage 1:**

Main study was conducted from 4.6.2011 to 15.7.2011 in Redema Ambattur Industrial Estate at Chennai. The pretest was conducted by using self structured questionnaire schedule to assess the level of knowledge and practice on utilization of safety measures among workers. by using simple random sampling technique.

##### **Stage2: implementation of video assisted teaching clipping;**

. The pre test was conducted by using the self structured questionnaire method for both experimental and control group. After fifteen days the video assisted teaching program was conducted to the experimental group alone. A short video clipping for 45 minutes, each day, 5 workers are attending video teaching program regarding occupational health and hazards, noise and vibration, heat and fire extinguisher and utilization of safety measures designed to impact level of the knowledge and practice in industrial workers. After one week the post test was conducted for the both experimental and control groups. The results were analyzed based on the workers scores.

### **DATA ANALYSIS:**

Each item was scored after pre and post test and responses were tabulated. The statistical method used for analysis were number percentage, mean, standard deviation, paired 't' test, chi-square test.

**STATISTICAL METHOD:**

S.NO	OBJECTIVE	STATISTICAL METHODS
1.	To assess of pretest and posttest level of knowledge and practice regarding utilization of safety measures among workers in the experimental and control group.	Number, percentage, mean and standard deviation.
2.	To compare of the effectiveness of video assisted teaching on knowledge and practice regarding utilization of safety measures among workers between the experimental and control group	Paired 't' test
3.	To correlate the knowledge and practice on utilization of safety measures among workers between the experimental and control group	Correlation coefficient
4.	To associate of post test level of knowledge and practice regarding utilization of safety measures among workers with their selected demographic variables in the experimental group.	Chi-square test

**DATA ANALYSIS AND INTERPRETATION OF FINDING**

This chapter deals with the data analysis and interpretation to assess the effectiveness of video assisted teaching on knowledge and practice regarding utilization of safety measures among workers in Redema Industrial Estate, Amabttur, Chennai.

Descriptive and inferential statistics were used for the analysis of the data. According to the study objectives the interpretation has been tabulated and organized as follows:

**ORGANIZATION OF DATA:**

**Section A:** Description of demographic variables of workers in the experimental and control group.

**Section B:** Assessment of pre and post assessment level of knowledge and practice regarding utilization of safety measures among workers in the experimental and control group.

**Section C:** Comparison of effectiveness of video assisted teaching on knowledge and Practice regarding utilization of safety measures among workers in the experimental and control group.

**Section D:** Correlation of knowledge and practice on utilization of safety measures among workers between the experimental and control group.

**Section E:** Association of post test level of knowledge and practice regarding utilization of safety measures among workers with their selected demographic variables in the experimental group.

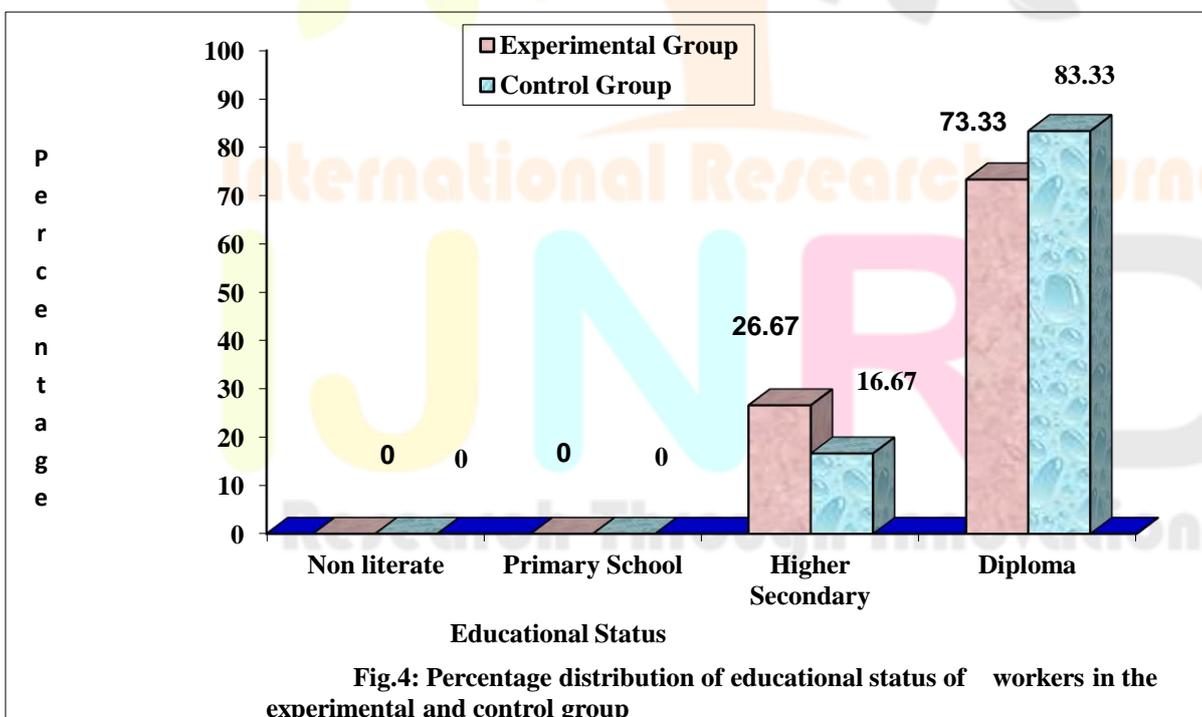
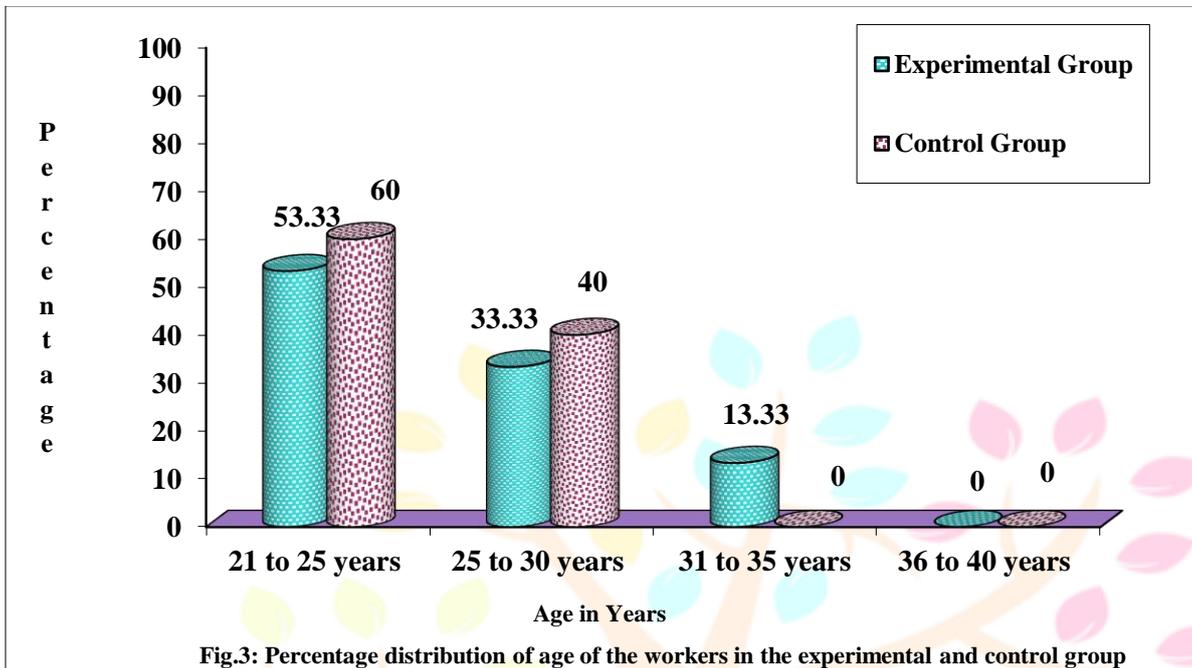
**Table 1: Frequency and percentage distribution of demographic variables of workers in the experimental and control group.**

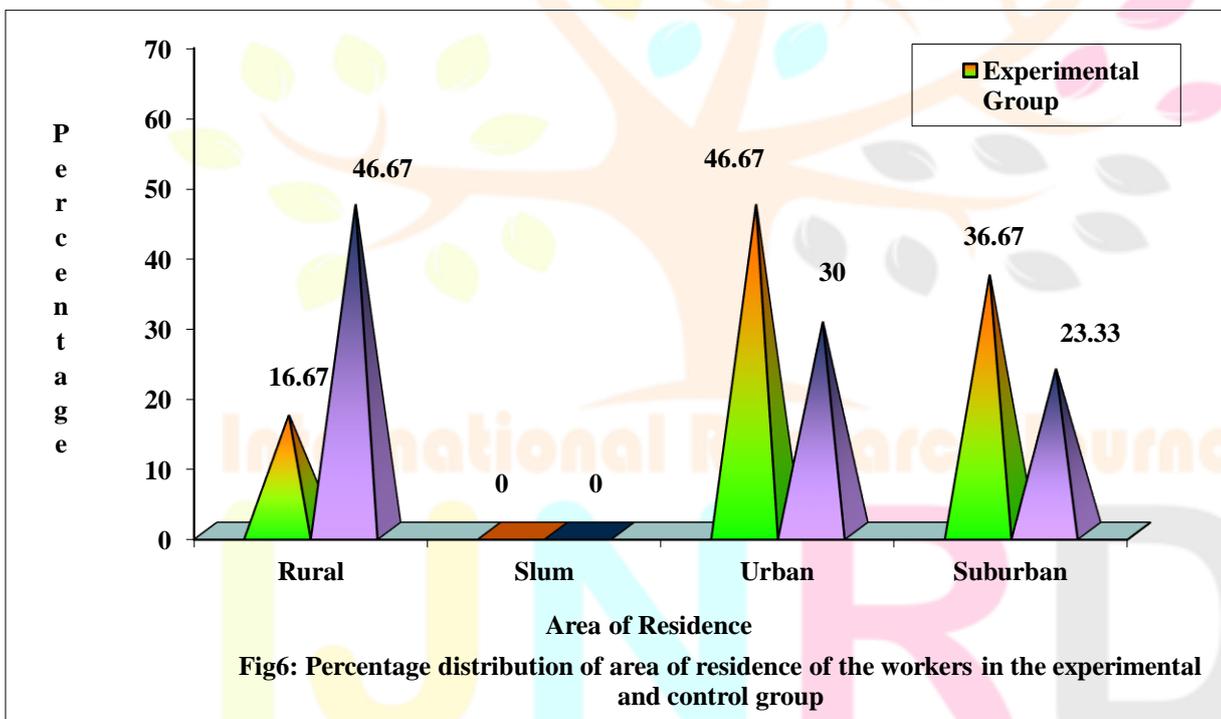
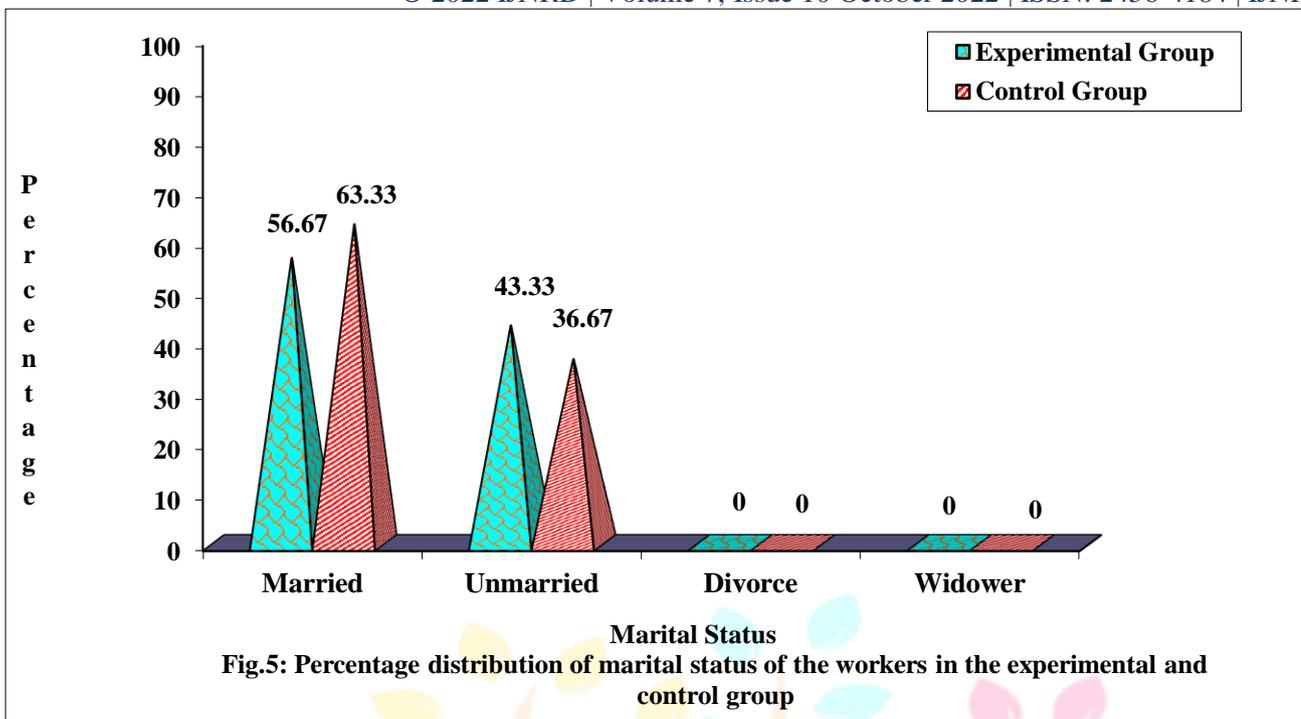
S.NO	Demographic Variables	Experimental Group		Control Group	
		No.	%	No.	%
1	<b>Age in Years:</b>				
	21 to 25 years	16	53.33	18	60
	26 to 30 years	10	33.33	12	40
	31 to 35 years	4	13.33	0	0.00
	36 to 40 years	0	0.00	0	0.00
2	<b>Educational Status:</b>				
	Non literate	0	0.00	0	0.00
	Primary School	0	0.00	0	0.00
	Higher Secondary	8	26.67	5	16.67
	Diploma	22	73.33	25	83.33
3	<b>Marital Status:</b>				
	Married	17	56.67	19	63.33
	Unmarried	13	43.33	11	36.67
	Divorce	0	0.00	0	0.00
	Widower	0	0.00	0	0.00
4	<b>Family Monthly Income:</b>				
	Below 2,000	0	0.00	0	0.00
	2,001 to 5,000	8	26.67	11	36.67
	5,001 to 10,000	22	73.33	15	50.00
	Above 10,000	0	0.00	4	13.33
5	<b>Area of residence:</b>				
	Rural	5	16.67	14	46.67
	Slum	0	0.00	0	0.00
	Urban	14	46.67	9	30.00
	suburban	11	36.67	7	23.33
6	<b>Total work experience:</b>				
	Below 1 years	10	33.33	14	46.67
	1 to 2 years	10	33.33	5	16.67
	3 to 4 years	4	13.33	4	13.33
	5 years	6	20.00	7	20.00
7	<b>Source of information:</b>				
	Mass media	13	43.33	11	36.67
	Health care professional	5	16.67	7	23.33
	Printed materials	5	16.67	6	20.00
	Family members	7	23.33	6	20.00

The above table 1 shows the frequency and percentage distribution of demographic variables of the Workers in the experimental and control group.

With regard to the age of the workers in the experimental group, majority 16(53.33) were in the age group of 21 to 25 years and whereas in the control group, majority 18 (60%) were in the age group of 21 to 25 years. Regarding the educational status of the workers in the experimental group, majority 22(73.33%) were Diploma holders and also in the control group, majority 25(83.33%) were Diploma holders. Considering the marital status of the workers, majority 17(56.67%) were married in the experimental group whereas in the control group, majority 19(63.33%) were married. With respect to family monthly income of the workers in the experimental group, majority 22(73.33%) had family monthly income between Rs.5, 001 to 10,000 and in the control group, majority 15(50%) had family monthly income between Rs.5, 001 to 10,000. On analyzing the area of residence of workers in the experimental group, majority 14(46.67%) were from urban area and in the control group, majority 14(46.67%)

were from rural area. Regarding the total work experience of the workers in the experimental group, majority 10(33.33) each had an experience of below 1 year and 1 to 2 years respectively. Whereas in the control group, majority 14(46.67%) had a total work experience of below 1 year. Considering the source of information of the workers in the experimental group, majority 13(43.33%) received information through mass media whereas in the control group, majority 11(36.67%) received information through mass media.





## SECTION -B

**Table 2: Frequency and percentage distribution of pretest level on various aspects of knowledge in the experimental group and control group.**

(n =30+ 30)

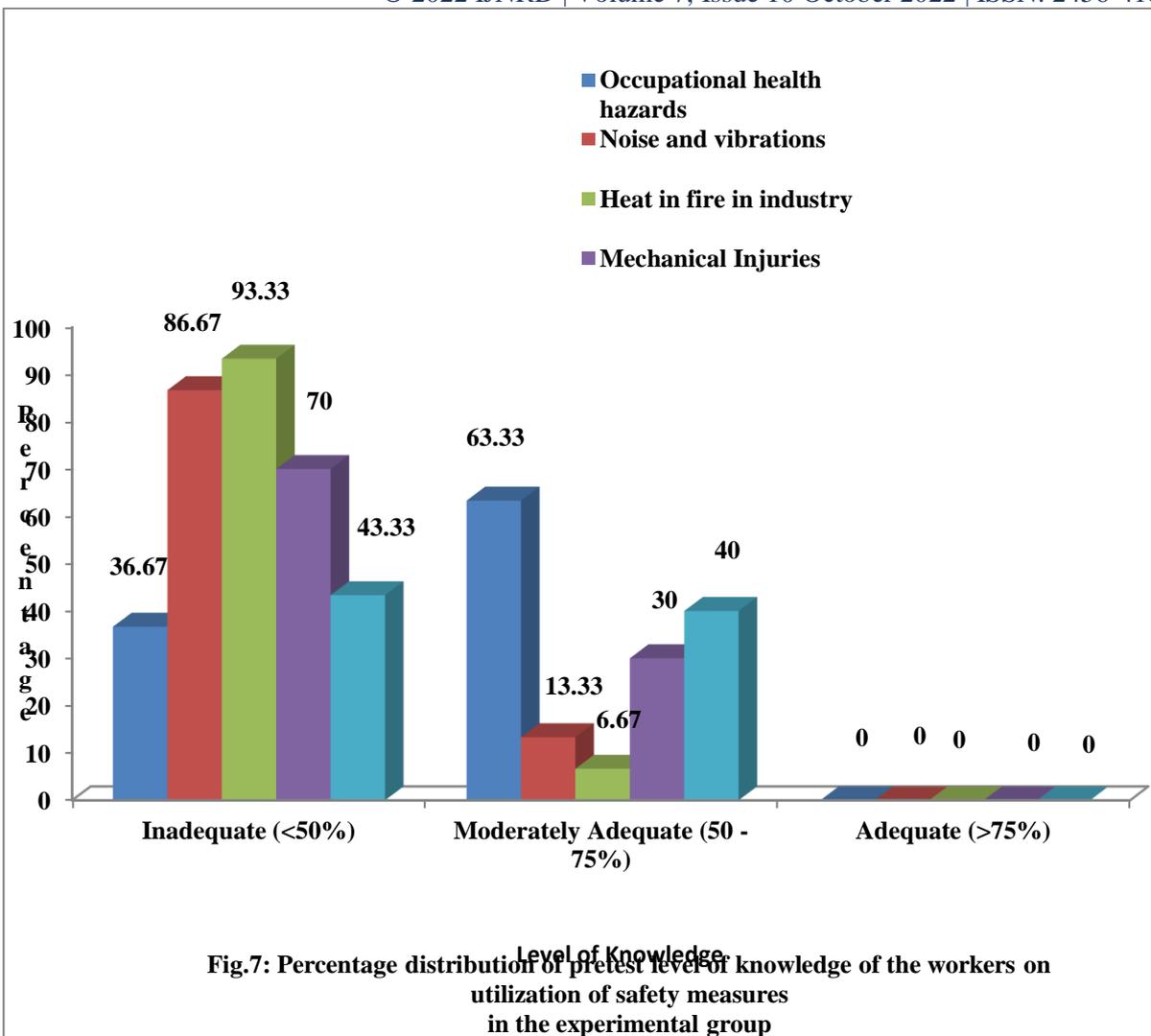
30Knowledge Aspects	Inadequate (<50%)		Moderately Adequate (50 – 75%)		Adequate (>75%)	
	No.	%	No.	%	No.	%
<b>Experimental group</b>						
Occupational health hazards	11	36.67	19	63.33	0	0
Noise and vibrations	26	86.67	4	13.33	0	0
Heat in fire in industry	28	93.33	2	6.67	0	0
Mechanical Injuries	21	70.0	9	30.0	0	0
Safety Measures	13	43.33	12	40.0	5	16.67
<b>Total score</b>	<b>30</b>	<b>100.0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Control group</b>						
Occupational health hazards	11	36.67	19	63.33	0	0
Noise and vibrations	13	43.33	13	43.33	4	13.33
Heat in fire in industry	28	93.33	2	6.67	0	0
Mechanical Injuries	28	93.33	2	6.67	0	0
Safety Measures	7	23.33	18	60.0	5	16.67
<b>Total score</b>	<b>30</b>	<b>100.0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>.0</b>

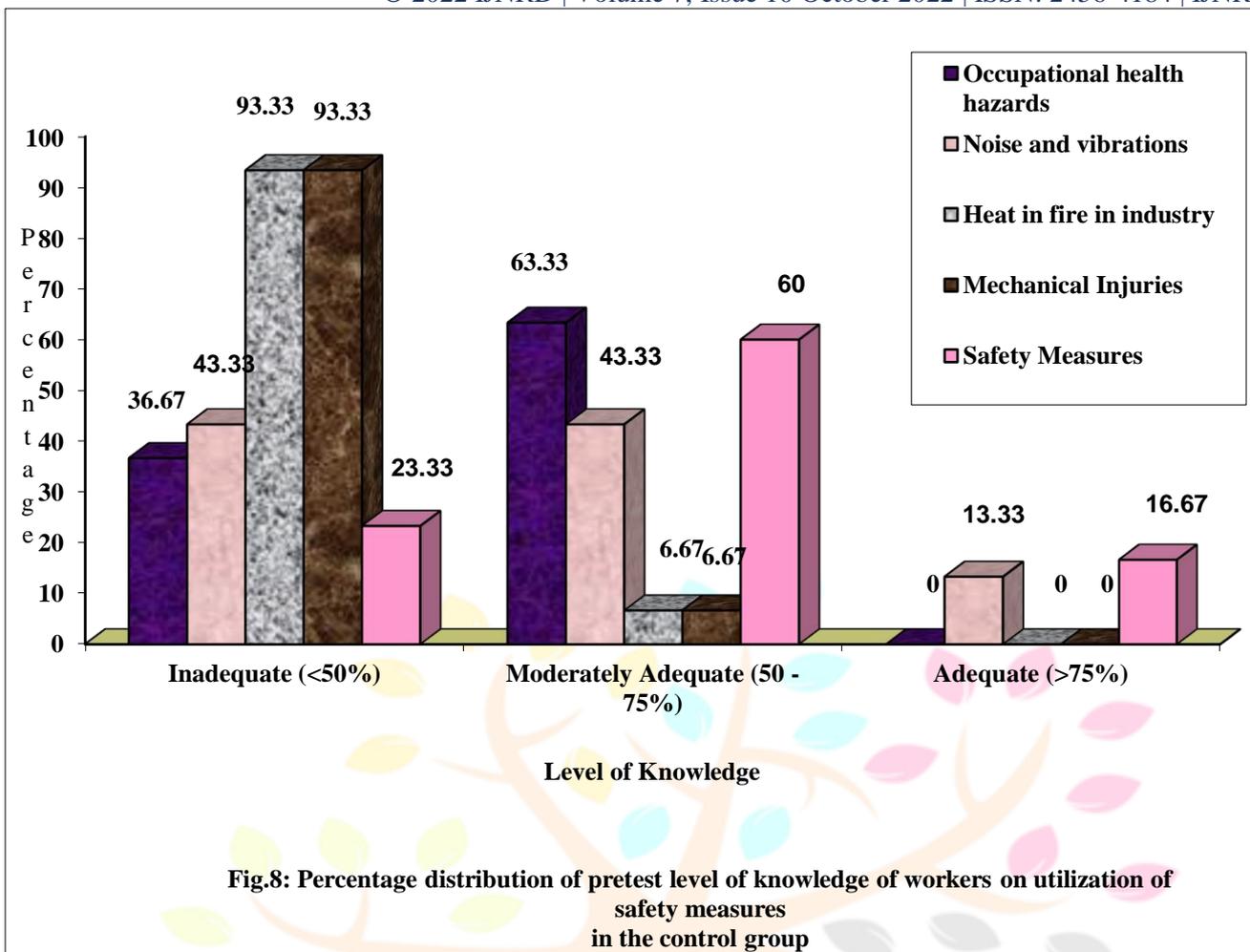
The above table depicts the frequency and percentage distribution of pretest level on various aspects of knowledge in the experimental group. Regarding the occupational health hazards, majority 19(63.33%) had moderately adequate knowledge. With regard to knowledge on noise and vibrations, majority 26(86.67%) had inadequate knowledge. With respect to knowledge on heat in fire industry, majority 28(93.33%) had inadequate knowledge. Analyzing the knowledge on mechanical injuries, majority 21(70%) had inadequate knowledge. Considering the knowledge on safety measures, majority 13(43.33%) had inadequate knowledge.

The overall level of knowledge on utilization of safety measures revealed that almost all 30(100%) had inadequate knowledge.

The above table depicts the frequency and percentage distribution of pretest level on various aspects of knowledge in the control group. Regarding the occupational health hazards, majority 19(63.33%) had moderately adequate knowledge. With regard to knowledge on noise and vibrations, majority 13(43.33%) each had inadequate and moderately adequate knowledge respectively. With respect to knowledge on heat in fire industry, majority 28(93.33%) had inadequate knowledge. Analyzing the knowledge on mechanical injuries, majority 28(93.33%) had inadequate knowledge. Considering the knowledge on safety measures, majority 18(60%) had moderately adequate knowledge.

The overall level of knowledge on utilization of safety measures revealed that almost all 30(100%) had inadequate knowledge.





**Fig.8: Percentage distribution of pretest level of knowledge of workers on utilization of safety measures in the control group**

**Table 3: Frequency and percentage distribution of posttest level of various aspects of knowledge in the experimental group and control group.**

(n = 30+30)

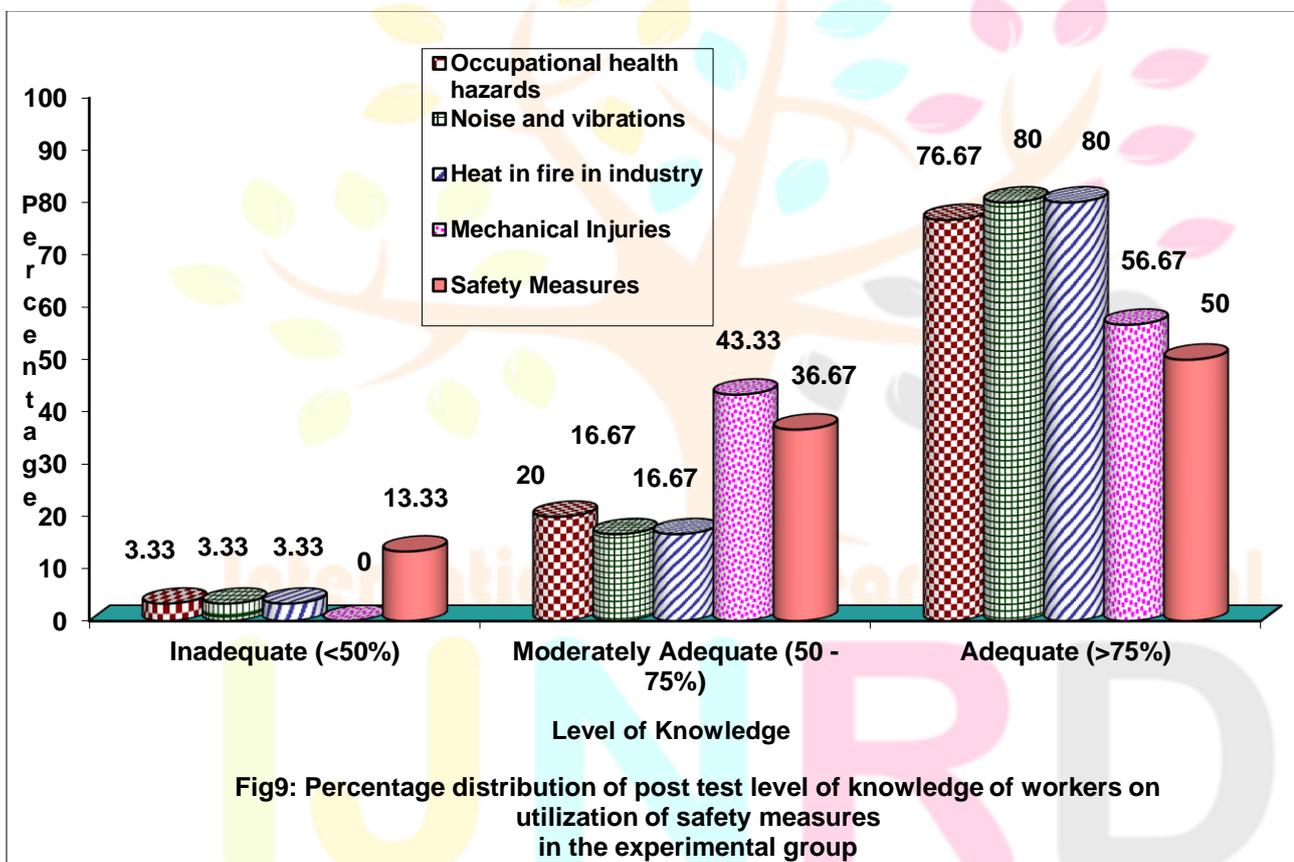
Knowledge Aspects	Inadequate (<50%)		Moderately Adequate (50 – 75%)		Adequate (>75%)	
	No.	%	No.	%	No.	%
<b>Experimental group</b>						
Occupational health hazards	1	3.33	6	20.0	23	76.67
Noise and vibrations	1	3.33	5	16.67	24	80.0
Heat in fire in industry	1	3.33	5	16.67	24	80.0
Mechanical Injuries	0	0	13	43.33	17	56.67
Safety Measures	4	13.33	11	36.67	15	50.0
<b>Total score</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>10.0</b>	<b>27</b>	<b>90.0</b>
<b>Control group</b>						
Occupational health hazards	11	36.67	19	63.33	0	0
Noise and vibrations	13	43.33	13	43.33	4	13.33
Heat in fire in industry	28	93.33	2	6.67	0	0
Mechanical Injuries	28	93.33	2	6.67	0	0
Safety Measures	6	20.0	18	60.0	6	20.0
<b>Total score</b>	<b>29</b>	<b>96.67</b>	<b>1</b>	<b>3.33</b>	<b>0</b>	<b>0</b>

The above table depicts the frequency and percentage distribution of post test level on various aspects of knowledge in the experimental group. Regarding the occupational health hazards, majority 23(76.67%) had adequate knowledge. With regard to knowledge on noise and vibrations, majority 24(80%) had adequate knowledge. With respect to knowledge on heat in fire industry, majority 24(80%) had adequate knowledge. Analyzing the knowledge on mechanical injuries, majority 17(56.67%) had adequate knowledge. Considering the knowledge on safety measures, majority 15(50%) had adequate knowledge.

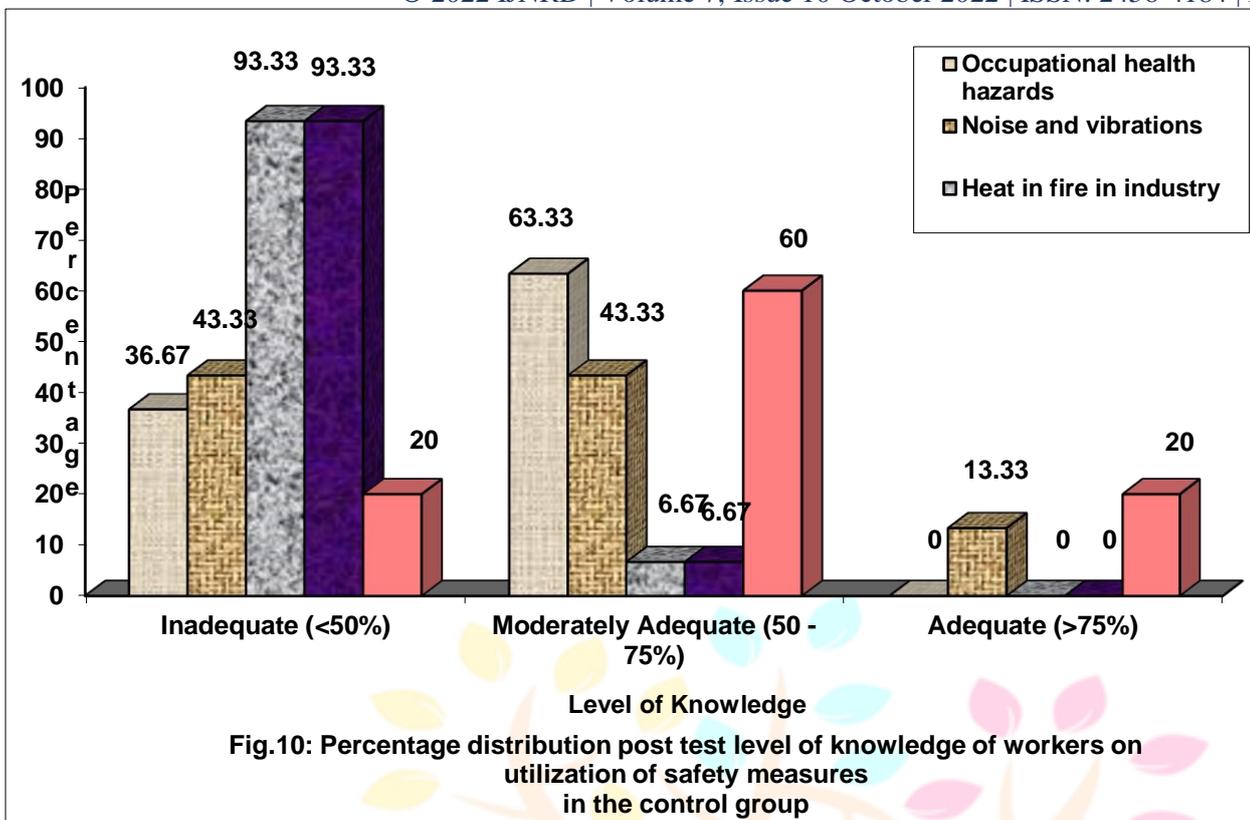
The overall level of knowledge on utilization of safety measures revealed that majority 27(90%) had adequate knowledge.

The above table depicts the frequency and percentage distribution of post test level on various aspects of knowledge in the control group. Regarding the occupational health hazards, majority 19(63.33%) had moderately adequate knowledge. With regard to knowledge on noise and vibrations, majority 13(43.33%) each had inadequate and moderately adequate knowledge respectively. With respect to knowledge on heat in fire industry, majority 28(93.33%) had inadequate knowledge. Analyzing the knowledge on mechanical injuries, majority 28(93.33%) had inadequate knowledge. Considering the knowledge on safety measures, majority 18(60%) had moderately adequate knowledge.

The overall level of knowledge on utilization of safety measures revealed that majority 29(96.67%) had inadequate knowledge.



Research Through Innovation



**Fig.10: Percentage distribution post test level of knowledge of workers on utilization of safety measures in the control group**

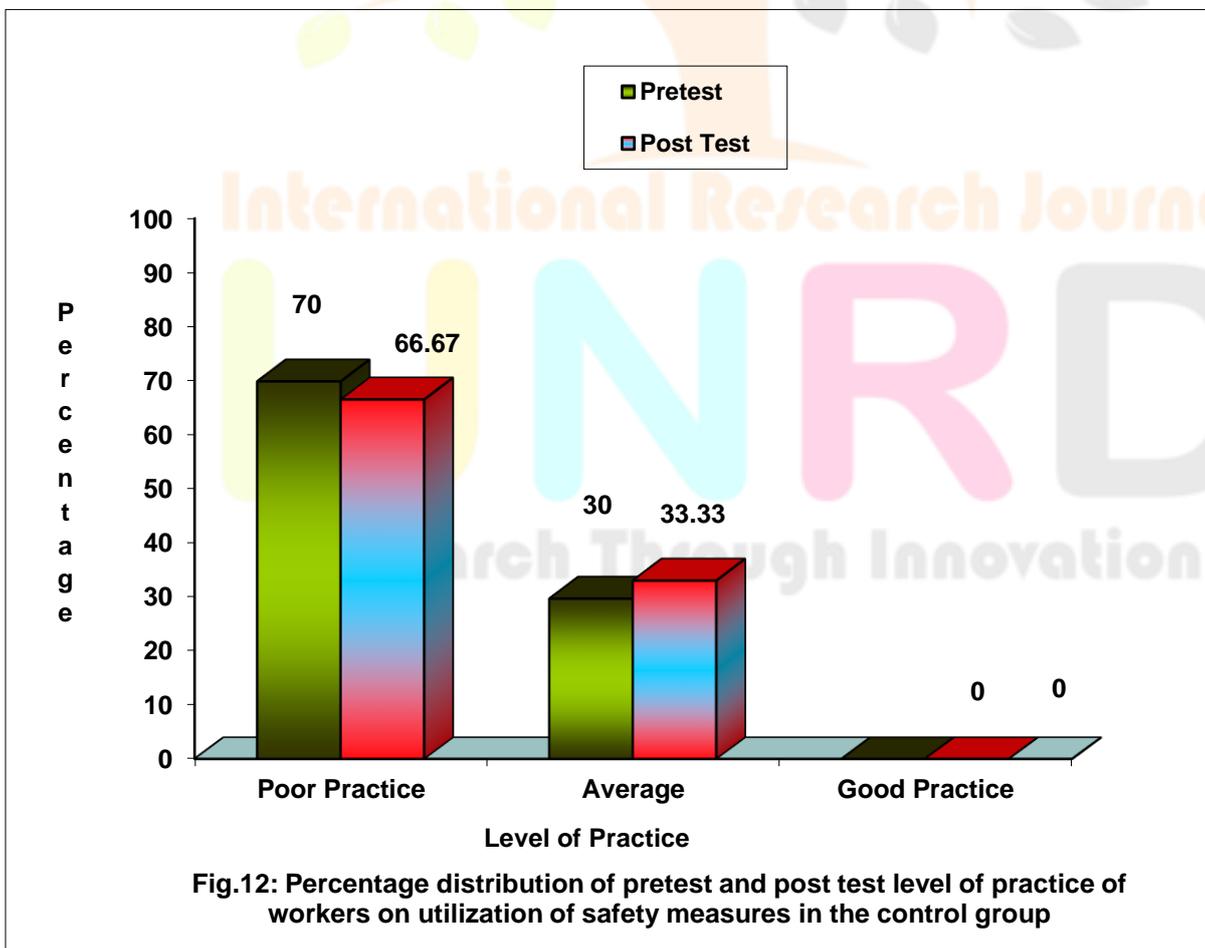
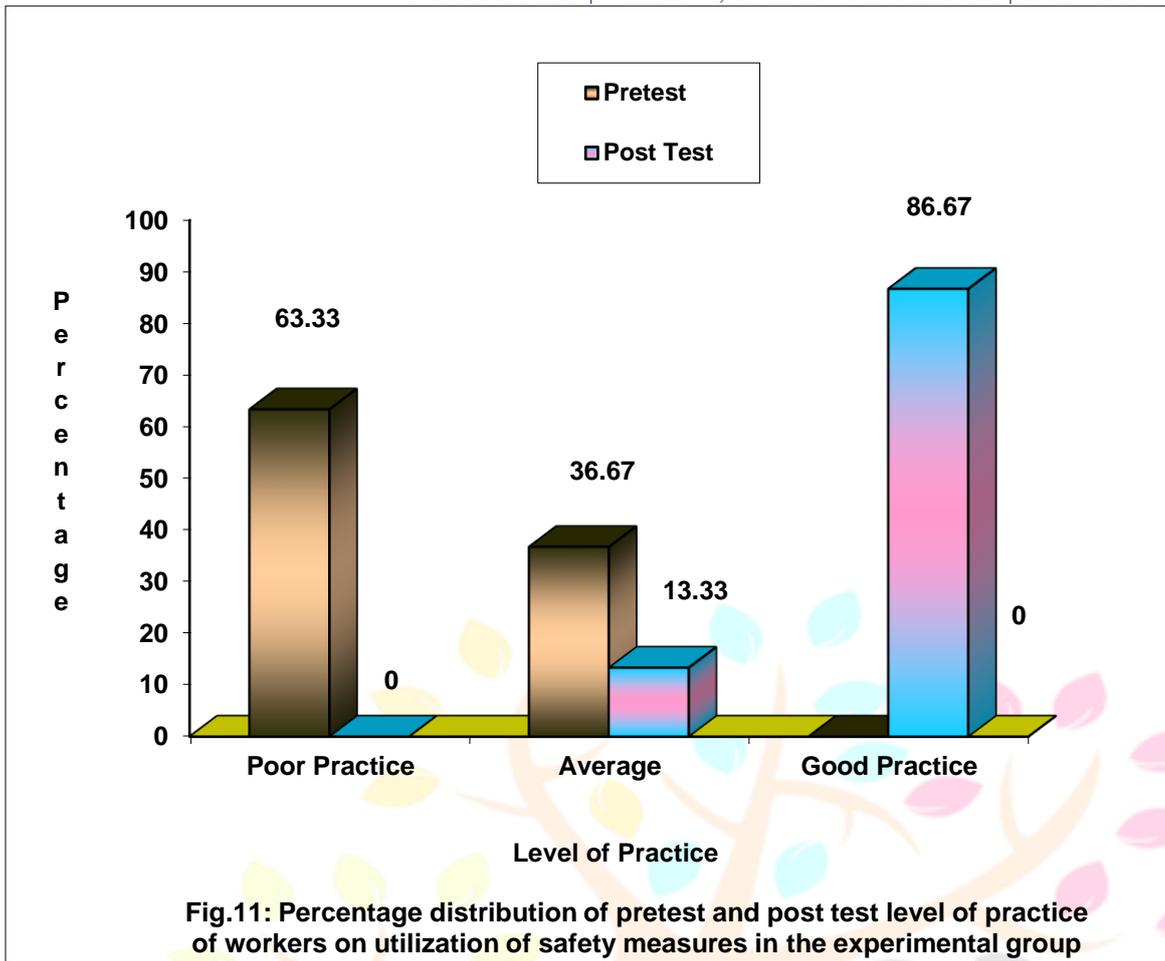
**Table 4: Frequency and percentage distribution of pre test and post test level of practice among workers in the experimental group and control group.**

(n = 30+30)

Practice	Poor Practice (<50%)		Average (50 – 75%)		Good (>75%)	
	No.	%	No.	%	No.	%
<b>Experimental group</b>						
Pretest	19	63.33	11	36.67	0	0
Post Test	0	0	4	13.33	26	86.67
<b>control group</b>						
Pretest	21	70.0	9	30.0	0	0
Post test	20	66.67	10	33.33	0	0

The above table depicts the frequency and percentage distribution of pretest and post test level of practice in the experimental group. In the pretest, majority of the workers 19(63.33%) had poor practice whereas in the post test, majority 26(86.67%) had good practice on utilization of safety measures.

The above table depicts the frequency and percentage distribution of pretest and post test level of practice in the control group. In the pretest, majority of the workers 21(70%) had poor practice whereas in the post test, majority 20(66.67%) had poor practice on utilization of safety measures.



**Table 5: Mean and standard deviation of pretest and post test level of knowledge scores among workers in the experimental group and control group.**

n = (30+ 30)

Knowledge Aspects	Pretest		Post Test	
	Mean	S.D	Mean	S.D
<b>Experimental group</b>				
Occupational health hazards	2.57	0.90	5.17	1.23
Noise and vibrations	1.70	0.79	4.23	0.86
Heat in fire in industry	1.37	0.85	4.23	0.97
Mechanical Injuries	1.00	0.79	2.57	0.50
Safety Measures	2.87	1.33	4.30	1.58
<b>Total score</b>	<b>9.50</b>	<b>1.72</b>	<b>20.50</b>	<b>1.53</b>
<b>Control group</b>				
Occupational health hazards	2.43	1.30	2.43	1.30
Noise and vibrations	2.53	0.97	2.43	1.30
Heat in fire in industry	0.97	1.00	0.97	1.00
Mechanical Injuries	0.67	0.61	0.67	0.61
Safety Measures	3.17	1.23	3.27	1.26
<b>Total score</b>	<b>9.77</b>	<b>1.63</b>	<b>9.87</b>	<b>1.85</b>

The above table depicts the mean and standard deviation of pretest and post test level of knowledge in the experimental group.

**Occupational Health Hazards:** In the pretest, mean score was 2.57 with S.D 0.90 and in the post test the mean score was 5.17 with S.D 1.23.**Noise and Vibrations:** In the pretest, mean score was 1.70 with S.D 0.79 and in the post test the mean score was 4.23 with S.D 0.86.**Heat in fir industry:** In the pretest, mean score was 1.37with S.D 0.85 and in the post test the mean score was 4.23 with S.D 0.97.**Mechanical Injuries:** In the pretest, mean score was 1.00 with S.D 0.79 and in the post test the mean score was 2.57 with S.D 0.50.**Safety Measures:** In the pretest, mean score was 2.87 with S.D 1.33 and in the post test the mean score was 4.30 with S.D 1.58.

The overall analysis shows that the pretest mean score was 9.50 with S.D 1.72 and the post mean score was 20.50 with S.D 1.53.

The above table depicts the mean and standard deviation of pretest and post test level of knowledge in the control group.

**Occupational Health Hazards:** In the pretest, mean score was 2.43 with S.D 1.30 and in the post test the mean score was 2.43 with S.D 1.30.**Noise and Vibrations:** In the pretest, mean score was 2.53 with S.D 0.97 and in the post test the mean score was 2.43 with S.D 0.97.**Heat in fir industry:** In the pretest, mean score was 0.97with S.D 1.00 and in the post test the mean score was 0.97 with S.D 1.00.**Mechanical Injuries:** In the pretest, mean score was 0.67 with S.D 0.61 and in the post test the mean score was 0.67 with S.D 0.61.**Safety Measures:** In the pretest, mean score was 3.17 with S.D 1.23 and in the post test the mean score was 3.27 with S.D 1.26.

The overall analysis shows that the pretest mean score was 9.77 with S.D 1.63 and the post mean score was 9.87 with S.D 1.85.

## SECTION- C

**Table 6: Comparison of pretest and post test level of knowledge in the among workers experimental group and control group.**  
n = (30+ 30)

Knowledge	Mean	S.D	't' Value
<b>Experimental group</b>			
Pretest	9.50	1.72	<b>28.605***</b> <b>p = 0.000, (S)</b>
Post Test	20.50	1.52	
<b>Control group</b>			
Pretest	9.77	1.63	<b>-1.000</b> <b>p = 0.326, (N.S)</b>
Post Test	9.87	1.85	

The above the table depicts that the pretest means score of knowledge was 9.50 with S.D 1.72 and the post test mean score was 20.50 with S.D 1.52. The calculated 't' value of 28.605 was found to be statistically highly significant at  $p < 0.001$  level. This implies that the video assisted teaching on knowledge on utilization of safety measures among workers in the experimental group had significant improvement and their knowledge increased in the post test. [ $p < 0.001$ , S – Significant]

The table 12 depicts that the pretest mean score of knowledge was 9.77 with S.D 1.63 and the post test mean score was 9.87 with S.D 1.85. The calculated 't' value of -1.000 was not found to be statistically significant. This implies that there is no improvement in the post test level of knowledge in the control group. [N.S – Not Significant].

**Table 7: Comparison of pretest and post test level of practice among workers in the experimental group and control group.**  
n = (30+30)

Practice	Mean	S.D	't' Value
<b>Experimental group</b>			
Pretest	7.17	1.20	<b>18.250***</b> <b>p = 0.000, (S)</b>
Post Test	12.90	1.06	
<b>Control group</b>			
Pretest	6.63	1.35	<b>-1.278</b> <b>p = 0.211, (N.S)</b>
Post Test	6.67	1.52	

The table 7 depicts that the pretest mean score of practice was 7.17 with S.D 1.20 and the post test mean score was 12.90 with S.D 1.06. The calculated 't' value of 18.250 was found to be statistically highly significant at  $p < 0.001$  level. This implies that the video assisted teaching on practice on utilization of safety measures among workers in the experimental group had significant improvement and their practice improved after the post test. [ $p < 0.001$ , S – Significant].

The table 7 depicts that the pretest mean score of practice was 6.63 with S.D 1.35 and the post test mean score was 6.77 with S.D 1.52. The calculated 't' value of -1.278 was not found to be statistically significant. This implies that there is no improvement in the post test level of practice in the control group. [N.S – Not Significant].

## SECTION- D

**Table 8: Correlation of post test level of knowledge and practice among workers in the experimental group**

(n = 30)

Post Test	Mean	S.D	'r' Value
Knowledge	20.50	1.52	<b>0.543**</b> <b>p = 0.002, (S)</b>
Practice	12.90	1.06	

\*\* $p < 0.01$ , S – Significant

Table 8 depicts that the post test knowledge mean score was 20.50 with S.D 1.52 and the post test mean score of practice was 12.90 with S.D 1.06. The calculated 'r' value was 0.543 which was found to statistically significant and positively correlated at  $p < 0.01$  level. This clearly indicates that when the knowledge of workers increases their practice level also increases.

## SECTION- E

**Table 9: Association of post test level of knowledge among workers with their demographic variables in the experimental group.**

(n = 30)

Demographic Variables	Inadequate (<50%)		Moderately Adequate (50 – 75%)		Adequate (>75%)		Chi-Square Value
	No.	%	No.	%	No.	%	
<b>Age in Years:</b>							$\chi^2 = 2.917$ d.f = 2 p = 0.233 N.S
21 to 25 years	-	-	3	10.0	13	43.3	
26 to 30 years	-	-	0	0	10	33.3	
31 to 35 years	-	-	0	0	4	13.3	
36 to 40 years	-	-	-	-	-	-	
<b>Educational Status:</b>							$\chi^2 = 0.076$ d.f = 1 p = 0.783 N.S
Non literate	-	-	-	-	-	-	
Primary School	-	-	-	-	-	-	
Higher Secondary	-	-	1	3.3	7	23.3	
Diploma	-	-	2	6.7	20	66.7	
<b>Marital Status:</b>							$\chi^2 = 0.739$ d.f = 1 p = 0.390 N.S
Married	-	-	1	3.3	16	53.3	
Unmarried	-	-	2	6.7	11	36.7	
Divorce	-	-	-	-	-	-	
Widower	-	-	-	-	-	-	
<b>Family Monthly Income:</b>							$\chi^2 = 0.076$ d.f = 1 p = 0.783 N.S
Below 2,000	-	-	-	-	-	-	
2,001 to 5,000	-	-	1	3.3	7	23.3	
5,001 to 10,000	-	-	2	6.7	20	66.7	
Above 10,000	-	-	-	-	-	-	
<b>Area of residence:</b>							$\chi^2 = 2.063$ d.f = 2 p = 0.356 N.S
Rural	-	-	1	3.3	4	13.3	
Slum	-	-	-	-	-	-	
Urban	-	-	2	6.7	12	40.0	
Suburban	-	-	0	0	11	36.7	
<b>Total work experience:</b>							$\chi^2 = 2.407$ d.f = 3 p = 0.492 N.S
Below 1 year	-	-	0	0	10	33.3	
1 to 2 years	-	-	1	3.3	9	30.0	
3 to 4 years	-	-	1	3.3	3	10.0	
5 years	-	-	1	3.3	5	16.7	
<b>Source of Information:</b>							$\chi^2 = 2.308$ d.f = 3 p = 0.511 N.S
Mass media	-	-	2	6.7	11	36.7	
Health care professional	-	-	1	3.3	4	13.3	
Printed materials	-	-	0	0	5	16.7	
Family members	-	-	0	0	7	23.3	

N.S – Not Significant

The above table shows that none of the demographic variables had shown statistically significant association with the post test level of knowledge of workers on utilization of safety measures in the experimental group.

**Table 10: Association of post test level of practice among workers with their demographic variables in the experimental group.**

(n = 30)

Demographic Variables	Poor Practice (<50%)		Average (50 – 75%)		Good (>75%)		Chi-Square Value
	No.	%	No.	%	No.	%	
<b>Age in Years</b>							$\chi^2 = 1.550$ d.f = 2 p = 0.461 N.S
21 to 25 years	-	-	1	3.3	15	50.0	
26 to 30 years	-	-	2	6.7	8	26.7	
31 to 35 years	-	-	1	3.3	3	10.0	
36 to 40 years	-	-	-	-	-	-	
<b>Educational Status</b>							$\chi^2 = 1.678$ d.f = 1 p = 0.195 N.S
Non literate	-	-	-	-	-	-	
Primary School	-	-	-	-	-	-	
Higher Secondary	-	-	0	0	8	26.7	
Diploma	-	-	4	13.3	18	60.0	
<b>Marital Status</b>							$\chi^2 = 0.632$ d.f = 1 p = 0.427 N.S
Married	-	-	3	10.0	14	46.7	
Unmarried	-	-	1	3.3	12	40.0	
Divorce	-	-	-	-	-	-	
Widower	-	-	-	-	-	-	
<b>Family Monthly Income</b>							$\chi^2 = 0.007$ d.f = 1 p = 0.935 N.S
Below 2,000	-	-	-	-	-	-	
2,001 to 5,000	-	-	1	3.3	7	23.3	
5,001 to 10,000	-	-	3	10.0	19	63.3	
Above 10,000	-	-	-	-	-	-	
<b>Area of residence</b>							$\chi^2 = 1.004$ d.f = 2 p = 0.605 N.S
Rural	-	-	0	0	5	16.7	
Slum	-	-	-	-	-	-	
Urban	-	-	2	6.7	12	40.0	
Suburban	-	-	2	6.7	9	30.0	
<b>Total work experience</b>							$\chi^2 = 5.337$ d.f = 3 p = 0.149 N.S
Below 1 year	-	-	3	10.0	7	23.3	
1 to 2 years	-	-	0	0	10	33.3	
3 to 4 years	-	-	1	3.3	3	10.0	
5 years	-	-	0	0	6	20.0	
<b>Source of Information</b>							$\chi^2 = 1.014$ d.f = 3 p = 0.798 N.S
Mass media	-	-	2	6.7	11	36.7	
Health care professional	-	-	0	0	5	16.7	
Printed materials	-	-	1	3.3	4	13.3	
Family members	-	-	1	3.3	6	20.0	

N.S – Not Significant

The above table shows that none of the demographic variables had shown statistically significant association with the post test level of practice of workers on utilization of safety measures in the experimental group.

## CHAPTER - V

### DISCUSSION

The aim of the study was to assess the effectiveness of video assisted teaching on knowledge, and practice regarding utilization of safety measures among workers in Redema Ambattur Industrial Estate at Chennai. The true experimental research design was used for the study.

A total of 60 industrial workers were selected for the study through [lottery method] Simple random sampling technique was used to select the samples. A self structured questionnaire based on knowledge and practice was used for data collection.

A video schedule on the knowledge and practice on utilization of safety measures was introduced before video teaching program. Post test was conducted by structured questionnaire.

The study samples were assorted and table 1 shows the frequency and percentage distribution of demographic variables of the workers in the experimental and control group. With regard to the age of the workers in the experimental group, majority 16(53.33) were in the age group of 21 to 25 years whereas in the control group, majority 25(83.33%) were in the age group of 21 to 25 years. Regarding the educational status of the workers in the experimental group, majority 22(73.33%) were Diploma holders and in the control group, majority 25(83.33%) were Diploma holders. Considering the marital status of the workers, majority 17(56.67%) were married in the experimental group and in the control group, majority 19(63.33%) were married. With respect to family monthly income of the workers in the experimental group, majority 22(73.33%) had family monthly income between Rs.5,001 to 10,000 and in the control group, majority 15(50%) had family monthly income between Rs.5,001 to 10,000. On analyzing the area of residence of workers in the experimental group, majority 14(46.67%) were from urban area and in the control group, majority 14(46.67%) were from rural area. Regarding the total work experience of the workers in the experimental group, majority 10(33.33) each had an experience of below 1 year and 1 to 2 years respectively. Whereas in the control group, majority 14(46.67%) had a total work experience of below 1 year. Considering the source of information of the workers in the experimental group, majority 13(43.33%) received information through mass media whereas in the control group, majority 11(36.67%) received information through mass media.

#### **The first objective of this study was Assessment of pre and post assessment level of knowledge and practice regarding utilization of safety measures among workers in the experimental and control group.**

The frequency and percentage distribution of pretest level on various aspects of knowledge in the experimental group. The overall level of knowledge on utilization of safety measures revealed that almost all 30(100%) had inadequate knowledge. In the control group the overall level of knowledge on utilization of safety measures revealed that almost all 30(100%) had inadequate knowledge.

The frequency and percentage distribution of post test level on various aspects of knowledge in the experimental group. The overall level of knowledge on utilization of safety measures revealed that majority 27(90%) had adequate knowledge. In the control group the overall level of knowledge on utilization of safety measures revealed that majority 29(96.67%) had inadequate knowledge.

The frequency and percentage distribution of pretest and post test level of practice in the experimental group the majority of the workers 19(63.33%) had poor practice whereas in the post test, majority 26(86.67%) had good practice on utilization of safety measures. In the control group. The majority of the workers 21(70%) had poor practice whereas in the post test, majority 20(66.67%) had poor practice on utilization of safety measures.

The Mean and standard deviation of pretest and post test level of knowledge scores among workers in the experimental group and control group. The overall score was 9.50 with S.D 1.72 and the post mean score was 20.50 with S.D 1.53. The overall analysis shows that the pretest mean score was 9.77 with S.D 1.63 and the post mean score was 9.87 with S.D 1.85.

The finding also supported by Natarajan .T [2010] states that a study to assess the knowledge and practice regarding utilization of safety measures among in sakthi sugar limited. The data showed that 40% of workers had inadequate knowledge, 37% had moderately adequate knowledge, and 23% workers had adequate knowledge regarding utilization of safety measures 40% of workers had good practice and 60% workers had poor practices. It was assessed that were significant with knowledge level and

where age, educational qualification, income, and working experience place of work and source of information. There will be a significant difference between the pre test and post test knowledge, and practice of safety measures among industrial workers after the video assisted teaching.

There by I accept the hypothesis stating that there is a significant difference in the pre test and post test level of knowledge, and practice of safety measures among industrial workers.

**The second objective of this study was Comparison of effectiveness of video assisted teaching on knowledge and practice regarding utilization of safety measures among workers between the experimental and control group.**

The pretest means score of knowledge was 9.50 with S.D 1.72 and the post test mean score was 20.50 with S.D 1.52. The calculated 't' value of 28.605 was found to be statistically highly significant at  $p < 0.001$  level. This implies that the video assisted teaching on knowledge on utilization of safety measures among workers in the experimental group had significant improvement and their knowledge increased in the post test. [ $p < 0.001$ , S – Significant]

The pretest mean score of knowledge was 9.77 with S.D 1.63 and the post test mean score was 9.87 with S.D 1.85. The calculated 't' value of -1.000 was not found to be statistically significant. This implies that there is no improvement in the post test level of knowledge in the control group. [N.S – Not Significant]..

The pretest and post test level of practice among workers in the experimental group. mean score of practice was 7.17 with S.D 1.20 and the post test mean score was 12.90 with S.D 1.06. The calculated 't' value of 18.250 was found to be statistically highly significant at  $p < 0.001$  level. This implies that the video assisted teaching on practice on utilization of safety measures among workers in the experimental group had significant improvement and their practice improved after the post test.

The pretest mean score of practice was 6.63 with S.D 1.35 and the post test mean score was 6.77 with S.D 1.52. The calculated 't' value of -1.278 was not found to be statistically significant. This implies that there is no improvement in the post test level of practice in the control group.

**The third objective of this study was Correlation of knowledge and practice on utilization of safety measures among workers between the experimental groups.**

. Table 8 depicts that the post test knowledge mean score was 20.50 with S.D 1.52 and the post test mean score of practice was 12.90 with S.D 1.06. The calculated 'r' value was 0.543 which was found to statistically significant and positively correlated at  $p < 0.01$  level. This clearly indicates that when the knowledge of workers increases their practice level also increases

**The fourth objective of this study was Association of post test level of knowledge and practice regarding utilization of safety measures among workers with their selected demographic variables in the experimental group.**

The above table shows that none of the demographic variables had shown statistically significant association with the post test level of practice of workers on utilization of safety measures in the experimental group.

The finding also supported by Joshi Sonapant [2009] conducted a study to assess the effectiveness of planned teaching on the knowledge and practice of workers in relation to the prevention of selected health hazards in the mechanical unit at Pune. The study adopted structured interview schedule to assess the knowledge and practice of workers for 100 samples. The majority [78%] of the samples scored between 56-82 in the pretest and minority [22%] scored between 56-82, whereas in the post test majority [97%] scored between 56-82 and minority [3%] scored between 56-82 which is highly significant.

On the whole, this study accepts the assumption which was formulated at the beginning of this study,

1. Mechanical industry labors may have inadequate knowledge regarding utilization of safety measures.
2. The selected variables have influence on worker's knowledge and practice regarding utilization of safety measures.
3. There are numbers of workers with occupational health hazards.

This chapter presents the summary of the study conclusion and implication for nursing and recommendation for future studies.

### **SUMMARY OF THE STUDY**

The purposes of the study was to assess the effectiveness of video assisted teaching on knowledge, and practice regarding utilization of safety measures among industrial workers in Redema industrial estate at Chennai.

The conceptual framework of this study was based on **MODIFIED J.W.KENNY'S OPEN SYSTEM MODEL**

A sample of 60 industrial workers who were working at Ambattur and Vavin unit of Redema Ambattur Industrial Estate, were selected by using Simple random technique [lottery method]. Each day 5 workers who fulfilled the inclusion criteria were selected for the study.

#### **The following tools were used for the present study:**

1. Video assisted teaching on utilization of safety measures includes occupational health, hazards, injuries, using fire extinguisher and using safety devices.
2. The investigator developed the tool with the help of various resources and review of literature. The tool consists of three parts.  
Part-I: it was related to the demographic characteristics Simple random technique was used for selection of the sample, descriptive statistics [frequency, percentage, mean and standard deviation] and inferential statistics [chi-square] was used to analyze the data and to test of hypothesis.  
Part-II: Self structured questionnaire to assess the knowledge of utilization of safety measures, by using multiple choice question which consisted of 25 questions were related to  
Part-III: Self structured questionnaire to assess the practice related to utilization of safety measures, by using yes or no question which consisted 15 questions were related to utilization of safety measures.

### **MAJOR FINDING OF THE STUDY**

1. The educational status of the workers in the experimental group, majority 22(73.33%) were Diploma holders and also in the control group, majority 25(83.33%) were Diploma holders.
2. The frequency and percentage distribution of pretest level on various aspects of knowledge in the experimental group to knowledge on noise and vibrations, majority 26(86.67%) had inadequate knowledge. in the control group to knowledge on noise and vibrations, majority 13(43.33%) each had inadequate and moderately adequate knowledge
3. In the experimental group to knowledge on heat in fire industry, majority 28(93.33%) had inadequate knowledge. in the control group to knowledge on heat in fire industry, majority 28(93.33%) had inadequate knowledge.
4. The frequency and percentage distribution of post test level on various aspects of knowledge in the experimental group to knowledge on noise and vibrations, majority 24(80%) had adequate knowledge to knowledge on noise and vibrations, majority 13(43.33%) each had inadequate and moderately adequate knowledge in control group.
5. The frequency and percentage distribution of pretest and post test level of practice in the experimental group. In the pretest, majority of the workers 19(63.33%) had poor practice whereas in the post test, majority 26(86.67%) had good practice on utilization of safety measures.
6. The video assisted teaching on knowledge on utilization of safety measures among workers in the experimental group had significant improvement and their knowledge increased in the post test. [ $p < 0.001$ , S – Significant]
7. The calculated 't' value of 18.250 was found to be statistically highly significant at  $p < 0.001$  level. This implies that the video assisted teaching on practice on utilization of safety measures among workers in the experimental group had significant improvement and their practice improved after the post test. [ $p < 0.001$ , S – Significant].
8. The calculated 'r' value was 0.543 which was found to statistically significant and positively correlated at  $p < 0.01$  level. This clearly indicates that when the knowledge of workers increases their practice level also increases

## CONCLUSION

The present study assessed the knowledge and practice of workers regarding utilization of safety measures. It was determined that of workers had inadequate knowledge on utilization of safety measures and of the workers had good practice on utilization of safety measures. The reason given by the workers for poor practice was lack of time, busy schedule, and stress in their job.

## NURSING IMPLICATION

The finding of the study will help the nurse in the following ways.

-Early identification of the occupational accidents.

-Encourage the workers to improve their knowledge and practice regarding utilization of safety measure during the working period.

The implication of the study could be discussed in four areas of nursing practice, education, nursing administration, nursing education, and nursing research.

## NURSING PRACTICE

Present study will help the nursing professionals working in community setup and industrial setup to know the utilization of safety measures to plan the health education program to prevent hazards and diseases. Motivate the instruction to administration to promote the use of safety measures.

## NURSING ADMINISTRATION

Since the study reveals that there is below average knowledge and practice of the workers regarding utilization of safety measures. It is necessary to include regular health education program and proper supervision by the safety officers in the concerned department Regular supervision by safety officer to identify the occupational health hazards and occupational health diseases.

## NURSINGH EDUCATION

Integration of theory practice is valid and it is important an nursing education. In-service education programmer should be conducted so that will gain knowledge regarding utilization of safety measures and provide information to their workers and will emphasize them to practice these measures. The nurse educator should invite the community health nurse to the industrial based education programmer to give the direction and guidance to the workers.

## NURSING RESEARCH

One of the aims of nursing research is to expand and to broaden the scope of nursing. The fresher's can use this for their reference research can help to develop alternative strategies to promote utilization of safety measures. Based on this study result, recommendation for further study can be conducted.

## RECOMMENDATION

- ❖ Comparative study can be done to assess the utilization of safety measures between small industries and large industries.
- ❖ The health team members could arrange health assessment camps in the Mechanical industries to assess the risk of occupational hazards periodically.
- ❖ The nursing students could organize health education program to the workers about prevention of occupational hazards during their industrial visit.
- ❖ The knowledge gained from this study may be utilized while conducting Occupational health programs.
- ❖ The community leaders, health officials and health workers should be oriented and sensitized to occupational hazards.
- ❖ Mass media to be used to impart knowledge on occupational hazards to the Working population.



PRE TEST CONDUCTED AMBATTUR UNIT



PRE TEST CONDUCTED AMBATTUR UNIT





#### POST TEST CONDUCTED VAVIN UNIT

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