

## **“The Effect Of Structured Teaching Programme On Prevention Of Fire Accidents Due To Domestic Gas Leakage Among Adult Women”**

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### **ABSTRACT**

Every year about 25,000 people die of fire accidents and related causes on an average. Majority of the victims are women comparing to men. Fire accidents have major effects on health of the individual. Fire accidents cause undefined morbidity and mortality which can be prevented through creating awareness and education of the adult women. **Materials and Methods:** The study was carried out using a quantitative, true experimental design. 120 adult women between 21 – 60 years of age were selected from Bawaliya Khurd as experimental group and 60 from Moradhat village were selected for control group. Samples were selected using a multi stage sampling with simple randomisation. Pre existing knowledge was assessed for adult women in both the groups using a structured questionnaire prepared by the investigator and validated by the nursing experts. Structured teaching programme on prevention of fire accidents due to domestic gas leakage was given to the participants in experimental group using flash cards. Control group was not provided with any intervention. Post test was conducted in both the group after a week of intervention. **Results:** The results shows that in experiment group, on an average, in post test after having structured teaching programme, the mean difference of knowledge gain score is 10.70(35.67%). Comparing to the mean difference of knowledge gain score 0.55(1.83%) in control group without any teaching. The difference shows the effectiveness of structured teaching programme. There is a significant association between the knowledge gain score and the age, education, period of using gas stoves and previous experience of burns of the participants. **Conclusion:** The study results showed that there is an effectiveness of structured teaching programme on prevention of fire accidents due to domestic gas leakage. Community Health Nurse can inculcate such education in community to reduce the incidents of fire accidents.

Key Words: Gas Leakage, M.P. , Community

### **INTRODUCTION**

Fire accidents affect the human with injuries as minimal effect on the loss of life as the maximum. The cylinders explode while getting in contact with the high temperature. The damage will be more severe once there is an explosion. The impact of fire accidents in the kitchens will cause not only a loss to the self but also to the environment. Burns caused by explosions are not only the leading cause of the disease but also lead to disability and disfigurement. Even a scald leaves its scar for many days, and then the impact of the major burns might not have to be explained.

Burns are the significant reason for the country's annual increase in mortality and morbidity. World Health Organization reports that about 2-3 lakh annual deaths are registered due to burns and its poor management. It registers about 6-7 million deaths due to burns in India alone. The poor management



of burns leads not only the mortality but also leaves the person with disability or deformity. It will direct the victim to a strong psychological crisis, socio-economic crisis and the list goes on.

### **NEED FOR THE STUDY**

Community health nurse play various role in the community to provide preventive, promotive and rehabilitative services. The most vital roles played by the community health nurse are the educator, advocate, and leader through which it is aimed to prevent and protect the people from illness/disease for which it is important to create awareness among the community. Awareness can be created through education aided with modules. A Planned educational programme on prevention of fire accidents due to domestic gas leakage among the women in the rural area, is unavailable in the schedule of community health nurse/ village health nurse. There for there is a need for the development of structured

teaching programme on prevention of fire accidents due to domestic gas leakage with an easy and compatible form of module to empower the adult women.

#### **STATEMENT OF THE PROBLEM**

“A study to assess the effectiveness of structured teaching programme on prevention of fire accidents due to domestic gas leakage among adult women in selected rural area of Indore MP”

#### **OBJECTIVES**

- ❖ To assess the pretest knowledge on prevention of fire accidents due to domestic gas leakage in experimental and control group
- ❖ To evaluate the effectiveness of structured teaching program on prevention of fire accidents due to domestic gas leakage
- ❖ To compare the posttest level of knowledge score in experimental and control group
- ❖ To find association between the pre-test knowledge on prevention of fire accidents due to domestic gas leakage and selected demographic variables among experimental and control group.

#### **HYPOTHESES**

- H<sub>1</sub>- There will be a significant difference between the pretest and posttest knowledge scores on prevention of fire accidents due to domestic gas leakage in experimental group
- H<sub>2</sub> - There will be a significant association between the pretest knowledge score on prevention of fire accidents due to domestic gas leakage and selected demographic variables

#### **ASSUMPTIONS**

- ❖ Women in the rural area have inadequate knowledge on the prevention of fire accidents due to gas leakage at homes
- ❖ Women will gain adequate knowledge regarding the prevention of fire accidents due to gas leakage after a structured teaching programme.

#### **DELIMITATIONS**

The study period is delimited to one month

### **METHODOLOGY**

#### **RESEARCH APPROACH**

A quantitative research approach was adopted.

#### **RESEARCH DESIGN**

The research design selected in this study is randomised control trial.



Group	Pre test	Intervention	Post test
Experimental	01	X	02
Control	01	Routine Activity	02

Key Notes

- 01: Assessment of Pretest knowledge of adult women in experimental group and control group prior to structured teaching programme
- X: Administration of structured teaching programme on prevention of fire accidents due to domestic gas leakage in experimental group
- 02: Evaluate the posttest knowledge of adult women after one week of the structured teaching programme in an experimental group and without structured teaching programme in control group

**3.3 SETTING OF THE STUDY**

The study was conducted in the BAwaliya Khurd and moradhat rural areas at Indore.

**3.4. DURATION OF THE STUDY**

The study was conducted for a period of four weeks from 02.02.20 to 04.03.20

**STUDY POPULATION**

Adult women in rural areas at selected villages in Indore

**Target population**

It includes adult women ranging from 21 – 60 years in the Bawaliya Khurd and Moradhat rural areas at Indore District.

**3.5.2. Accessible population**

Adult women ranging from 21 – 60 years who were available during the period of data collection

**SAMPLE**

In this study, adult women who met the inclusion criteria were selected as samples.

**CRITERIA FOR SAMPLE SELECTION**

**3.6.1 (a) Inclusion criteria**

- Adult women ranging from the age of 21 – 60 years
- Adult women using liquefied petroleum gas stoves in their home
- Adult women residing in selected rural area and able to read and write in Hindi language

**3.6.1 (b) Exclusion criteria**

- Adult women using fire wood, or induction stoves alone for cooking
- Adult women who are not interested to participate in the study

**SAMPLE SIZE**

The study sample comprises of 60 adult women in the experimental group from Bawaliya Khurd and 60 in the control group from Moradhat.

**SAMPLING TECHNIQUE**



Using a multi stage sampling technique, two villages are selected through simple randomisation (lottery) method and randomly assigned as experimental group and control group. The streets in each village are again randomised. 6- 7 streets in each village are selected using simple randomisation (lottery) method to alleviate the bias. In each street the households for the study are selected again using simple systematic randomisation.

**RESEARCH VARIABLES OF THE STUDY**

**Independent Variable**

In the present study the independent variable is the individualized structured teaching programme on prevention of fire accidents due to domestic gas leakage given by the investigator.

**Dependent Variable**

In the present study, knowledge of mothers on prevention of fire accidents due to domestic gas leakage is the dependent variable which is assessed using the pretest and post test scores.

**Demographic Variable**

Age, Marital status, Education, Occupation, Family Income per month, Period of using gas stoves, and Previous experiences of burns and gas leakage are used in the study.

The analysis and interpretation is derived under 5 sections as given below:

- Section I** : Description of demographic variables of the study population in experimental and control group
- Section-II** Description of pretest knowledge level of the study population in experimental and control group
- Section-III** Description of posttest knowledge level of the study population in experimental and control group
- Section-IV** Effectiveness of structured teaching programme and generalization of knowledge gain score
- Section-V(A)** Comparison of posttest knowledge level in both experimental and control group
- Section-V(B)** Comparison of domain wise pre and posttest knowledge level in both experimental and control group
- Section-VI** Association between pretest level of knowledge score and demographic variables in experimental group

**SECTION-I: DESCRIPTION OF DEMOGRAPHIC VARIABLES OF THE STUDY POPULATION IN EXPERIMENTAL AND CONTROL GROUP**

**Table-4.1: Distribution Of Demographic Variables Of The Study Population In Experimental And Control Group**

Demographic variables	Group			
	Experiment(n=60)		Control(n=60)	
	n	%	n	%
Age of the 21 - 30 years	15	25.00	18	30.00

<b>women</b>	31 - 40 years	26	43.33	28	<b>46.67</b>
	41 -50 years	17	28.34	12	<b>20.00</b>
	51 -60 years	2	03.33	2	<b>03.33</b>
<b>Marital status</b>	Married	52	86.67	50	<b>83.33</b>
	Unmarried	6	10.00	8	<b>13.34</b>
	Widow	2	03.33	2	<b>03.33</b>
<b>Education status</b>	Post graduate	4	06.67	2	<b>03.33</b>
	Graduate	3	05.00	4	<b>6.67</b>
	Intermediate/ Diploma	4	06.67	5	<b>08.33</b>
	Higher secondary	19	31.66	18	<b>30.00</b>
	Secondary education	13	21.66 %	13	<b>21.67</b>
	Primary education	16	26.67	16	<b>26.67</b>
	Illiterate	1	01.67	2	<b>03.33</b>
<b>Occupation status</b>	Profession	2	3.33	1	<b>01.67</b>
	Semi Profession	1	01.67	2	<b>03.33</b>
	Clerk	2	03.33	1	<b>01.67</b>
	Shop owner	3	05.00	2	<b>03.33</b>
	Agriculture/ fishery	0	00.00	0	<b>00.00</b>
	Self employed	13	21.67	19	<b>31.67</b>
	<b>Unemployed</b>	<b>39</b>	<b>65.00</b>	<b>35</b>	<b>58.33</b>



Demographic variables		Group			
		Experiment(n=60)		Control(n=60)	
		n	%	n	%
Family monthly income	Below Rs 2091	0	00.00	0	00.00
	Rs 2,092-6,213	25	41.67	22	36.67
	Rs 6,214-10,356	32	53.33	34	56.66
	Rs 10,357-15,535	3	05.00	4	06.67
	Rs15,536-20,714	0	00.00	0	00.00
	Rs 20,715-41,429	0	00.00	0	00.00
	Above Rs 41,430	0	00.00	0	00.00
Period of using gas stoves	1 - 5years	18	30.00	15	25.00
	6 -10years	30	50.00	25	41.67
	11 -15years	10	16.67	17	28.33
	>15years	2	03.33	3	05.00
Previous experience of burns	Yes	21	35.00	17	28.33
	No	39	65.00	43	71.67
Type of burns	Scalds	20	95.24	15	88.24
	Contact flame burns	1	4.76	2	11.76
Previous experience of gas leakage	Yes	15	25.00	10	16.67
	No	45	75.00	50	83.33
Management of gas leakage	Called for help	13	86.67	8	80.00
	Opened the windowsand doors	2	13.33	2	20.00
	Did not do anything	0	0.00	0	0.00

Table 4.1 describes the description of demographic variables of the study population in both experimental and control group.

Out of the total study population most of the samples 26 (43.33%) in experimental group and 28 (46.67%) in control group belong to the age group of 31 to 40 years.

Of the total adult women participated in the study 52(86.67%) in experimental group and 50(83.33%) in control group were married.

Considering the education predominant samples about 19(31.66%) in experimental and 18(30%) in control group have completed higher secondary education.

In view of occupation 39(65%) in experimental and 35(58.33%) in control group are unemployed.

Contemplating to the income of the family, majority of the participants about 32(53.33%) in experimental and 34(56.66%) in control group are earning Rs.6214 to Rs.10, 356 per month as family income.

With regard to the period of using gas appliances, 30(50%) in experimental and 25(41.67%) in control group are using the gas appliance for 6 to 10 years.

In view of previous experiences, more number of participants about 21(35%) of participants in experimental group had previous experiences of burns and in control group the



previous experience of burns reported about 17(28.33%). Out of which scalds were experienced by the huge number of participants of about 20(95.24%) in experimental group and about 15(88.24%) in control group.

Concerning the previous experience with gas leakage, about 15(25%) in experimental group and 10(16.67%) in control group have reported the previous experience of gas leakage. 13(86.67%) in experimental group and 8(80%) in control group called for help during the time of gas leakage.

**SECTION-II: DESCRIPTION OF PRE TEST KNOWLEDGE LEVEL OF THE ADULT WOMEN IN EXPERIMENTAL AND CONTROL GROUP**

**Table 4.2: Description of Pretest level of knowledge in experimental and control group**

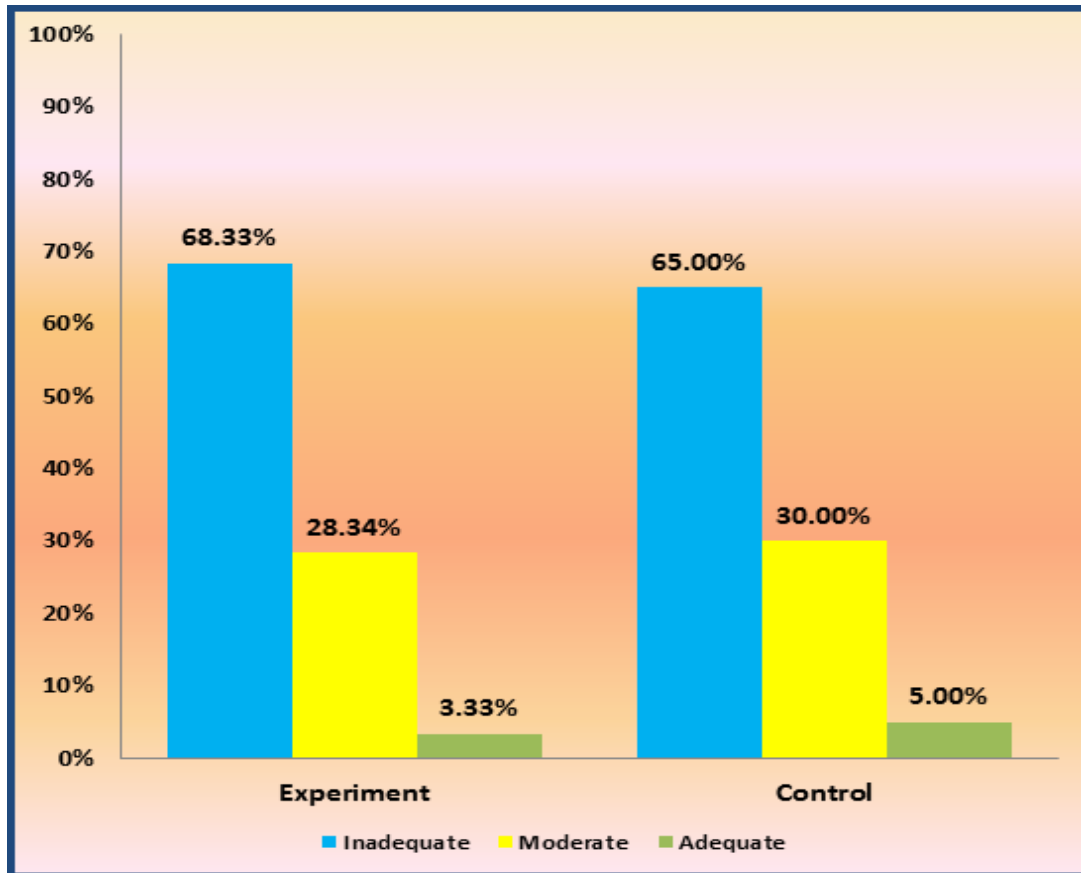
Knowledge level of the participants	Experiment group		Control group	
	N	%	n	%
Inadequate	41	68.33	39	65.00
Moderate	17	28.34	18	30.00
Adequate	2	3.33	3	5.00
Total	60	100.00	60	100.00

The above table describes that in experiment group, 41(68.33%) of them are having inadequate level of score, 17(28.34%) of them are having moderate level and 2(3.33%) are having adequate level of score.

In control group, 39(65.00%) of them are having inadequate level of score, 18(30.00%) of them are having moderate level and 3(5.00%) are having adequate knowledge on prevention of fire accidents before the intervention.

**Fig. 4.11 Pretest Knowledge Score of the participants**  
 SECTION-III: DESCRIPTION OF POST TEST KNOWLEDGE LEVEL OF THE  
 ADULT WOMEN IN EXPERIMENTAL AND CONTROL GROUP

**Table-4.3: Description of Posttest level of knowledge in experimental and control group**



Knowledge level of the participants	Experiment group		Control group	
	N	%	n	%
Inadequate	0	0.00	37	61.67
Moderate	14	23.33	19	31.66
Adequate	46	76.67	4	6.67
Total	60	100.00	60	100.00

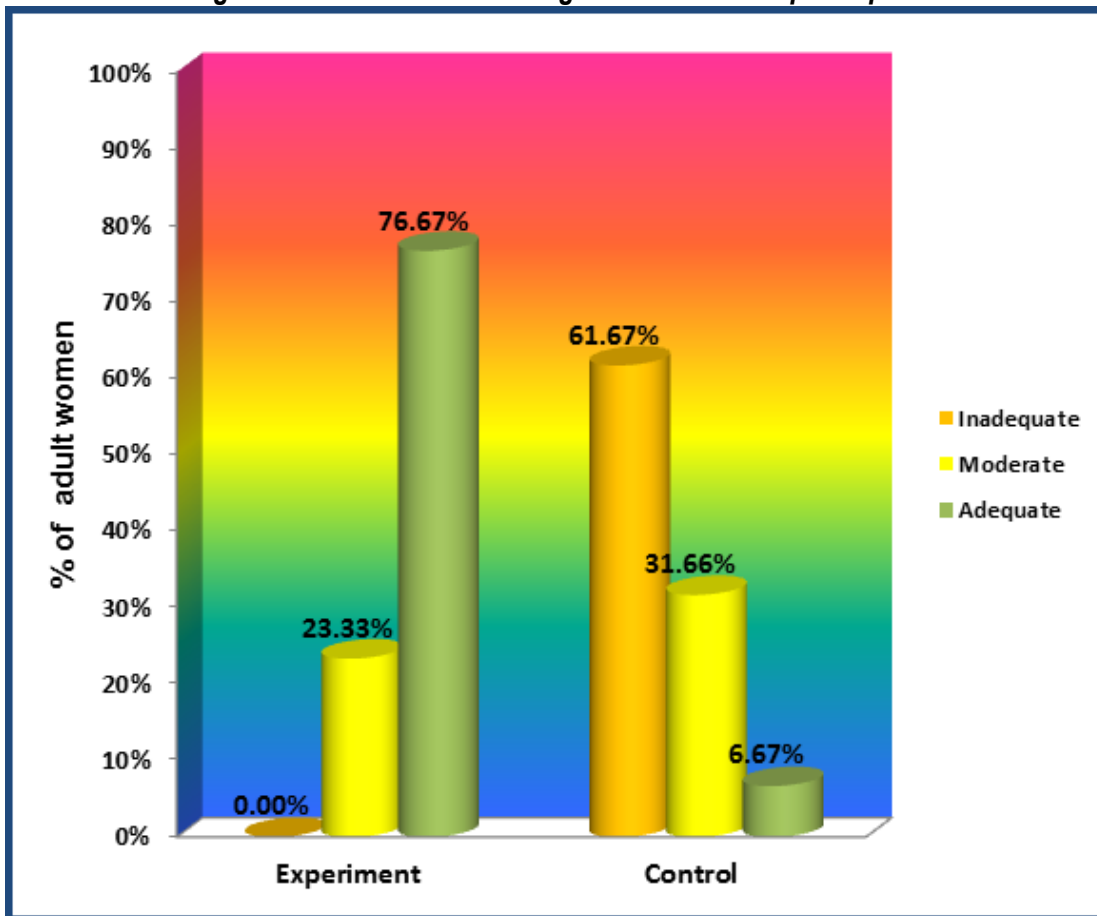
The table describes that in experimental group after Structured teaching programme **no one** has got inadequate knowledge whereas in control group about 37(61.67%) of women have inadequate knowledge without structured teaching programme.



About 14(23.33%) of women in experimental group have moderate level of knowledge and 46(76.67%) of women in experimental group have adequate knowledge after the structured teaching programme.

But in control group without structured teaching programme, 19(31.66%) women have moderate level of knowledge and about 4(6.67%) have adequate level of knowledge.

**Fig. 4.12: Posttest Knowledge Score of the participants**



**SECTION-IV: EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME AND GENERALIZATION OF KNOWLEDGE GAIN SCORE**

**Table-4.4: Effectiveness of structured teaching programme and generalization of knowledge gain score**

Group	Max score	Mean score	Mean Difference of knowledge gain score with 95% Confidence interval	Percentage of knowledge gain score with 95% Confidence interval

Experiment	Pretest	30	12.67	10.70(9.52 – 11.87)	35.67 % (31.73%–39.57%)
	Posttest	30	23.37		
Control	Pretest	30	13.22	0.55(-0.08 – 1.21)	1.83% (-0.27% – 4.03%)
	Posttest	30	13.77		

The table outlines the effectiveness of structured teaching programme on prevention of fire accidents due to domestic gas leakage among adult women in selected rural area.

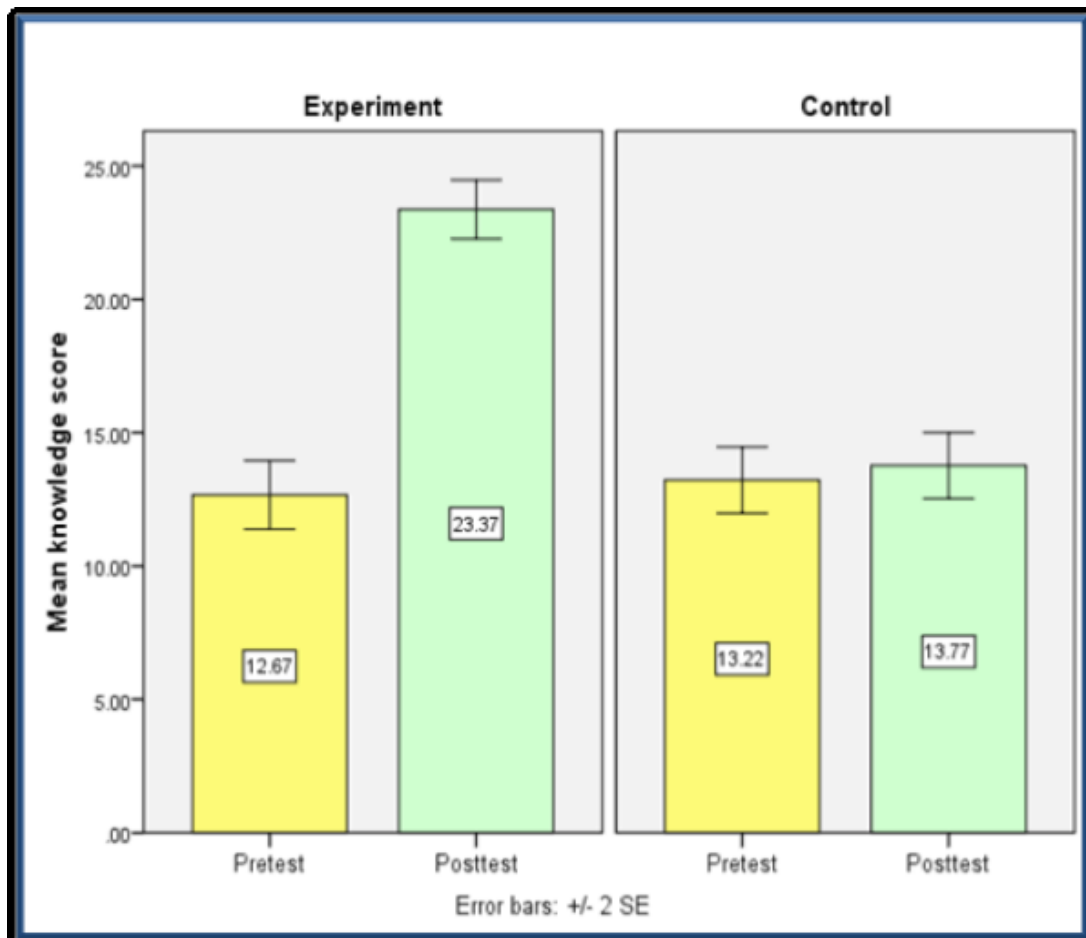
The post-test knowledge of the adult women after having STP, in experimental group is 35.67% more knowledge score than pre-test score.

In control group, on an average, in post-test without STP, adult women have gained 1.83% more knowledge score than pre-test score.

This difference shows the effectiveness of structured teaching programme.

Differences and generalization of knowledge gain score between pretest and post test score was calculated using mean difference with 95% CI and proportion with 95% CI.

**Fig 4.13: Effectiveness of structured teaching programme**



**SECTION-V (A): COMPARISON OF PRE AND POST TEST KNOWLEDGE LEVEL IN**

**BOTH EXPERIMENTAL AND CONTROL GROUP**

**Table-4.5: Comparison of pretest and posttest level of knowledge score**

Group	Knowledge Level	Pretest		posttest		Extended Mc Nemar's test
		n	%	n	%	
Experiment	Inadequate	41	68.33	0	0.00	$\chi^2=44.02$ $P=0.001^{***}$ (S)
	Moderate	17	28.34	14	23.33	
	Adequate	2	3.33	46	76.67	
	Total	60	100.0	60	100.00	
Control	Inadequate	39	65.00	37	61.67	$\chi^2=3.00$ $P=0.08$ (NS)
	Moderate	18	30.00	19	31.66	
	Adequate	3	5.00	4	6.67	
	Inadequate	60	100.0	60	100.00	

NS= not significant, s= Significant

The table compares the level of knowledge in pretest and posttest. Considering experiment group, in pretest, 41(68.33%) of them are having inadequate knowledge score, 17(28.34%) of them are having moderate level of knowledge score and 2(3.33%) of them are having adequate level of knowledge score. In posttest, none of them are having inadequate knowledge score, 14(23.33%) of them are having moderate level of knowledge score and 46(76.67%) of them are having adequate level of knowledge score. Extended Mc Nemar's test was used to find the statistical significance. The  $\chi^2=44.02$ ,  $P=0.001$  shows that there is high significance of posttest knowledge level in experimental group. This **accepts the hypothesis (H<sub>1</sub>)** stating that there is a significant difference between pretest and posttest knowledge level in experimental group.

With regard to the knowledge gain in control group, in pretest, 39(65%) of them are having inadequate knowledge score, 18(30.0%) of them are having moderate level of knowledge score and 3(5%) of them are having adequate level of knowledge score. In posttest, 37(61.67%) of them are having inadequate knowledge score, 19(31.66%) of them are having moderate level of knowledge score and 4(6.67%) of them are having adequate level of knowledge score. There is no significant difference between pretest and posttest knowledge score. Pretest and posttest significance was calculated using Extended Mc. Nemar test.

**SECTION-IV (B): COMPARISON OF DOMAIN WISE PRE AND POST TEST KNOWLEDGE LEVEL IN BOTH EXPERIMENTAL AND CONTROL GROUP**

**Table-4.6 Comparison of pre and posttest mean difference score in experimental and control**

*group*

	Domain	Pretest		Posttest		Mean difference	Student paired-t-test
		Mean score	SD	Mean score	SD		
EXPERIMENTAL	knowledge on fire accidents and its management at home	3.75	1.95	7.65	1.88	3.90	t=16.51 P=0.001***(S)
	knowledge related to preliminary checks while buying gas	0.77	0.65	1.45	0.70	0.68	t=6.68 P=0.001***(S)
	knowledge aspects on safety measures while cooking with domestic gas	4.17	2.05	7.03	1.78	2.86	t=9.96 P=0.001***(S)
	knowledge on gas leakage	0.73	0.58	1.57	0.53	0.84	t=10.99 P=0.001***(S)
	knowledge aspects on management of gas leakage	3.10	1.48	5.00	0.99	1.90	t=9.31 P=0.001***(S)
	knowledge on emergency helpline	0.15	0.36	0.67	0.48	0.52	t=7.94 P=0.001***(S)
	Total	12.67	4.96	23.3	4.28	10.70	t=18.29 P=0.001***(S)
	CONTROL	knowledge on fire accidents and its management at home	3.97	2.12	4.08	2.17	0.11
knowledge related to preliminary checks while buying gas		0.87	.57	0.92	.62	0.05	t=0.51 P=0.60(NS)
knowledge aspects on safety measures while cooking with domestic gas		4.33	1.73	4.45	1.79	0.12	t=1.41 P=0.16(NS)
knowledge on gas leakage		0.85	.40	0.88	.45	0.03	t=1.43 P=0.16(NS)
knowledge aspects on management of gas leakage		3.07	1.13	3.27	1.12	0.20	t=1.79 P=0.08(NS)
knowledge on emergency helpline		0.13	.34	0.17	.38	0.04	t=0.53 P=0.59(NS)
Total		13.22	4.80	13.7	4.78	0.55	t=1.92 P=0.06(NS)

**SECTION-VI: ASSOCIATION BETWEEN PRE TEST LEVEL OF KNOWLEDGE SCORE AND DEMOGRAPHIC VARIABLES IN EXPERIMENTAL GROUP**

**Table-4.7: Association between pretest level of knowledge score and demographic variables (experimental group)**

Demographic variables		Pretest level of knowledge score						n	Chi square test
		Inadequate		Moderate		Adequate			
		n	%	n	%	n	%		
Age of the women	21 - 30 years	0	00.00	7	46.67	8	53.33	15	χ <sup>2</sup> =8.91 P=0.03*(S)
	31 - 40 years	0	00.00	2	07.69	24	92.31	26	
	41 -50 years	0	00.00	4	23.53	13	76.47	17	
	51 -60 years	0	00.00	1	50.00	1	50.00	2	
Education status	Post graduate	0	00.00	0	00.00	4	100	4	χ <sup>2</sup> =3.17 P=0.05* (S)
	Graduate	0	00.00	0	00.00	3	100	3	
	Diploma	0	00.00	0	00.00	4	100	4	
	Higher secondary	0	00.00	4	21.05	15	78.9	19	
	Secondary education	0	00.00	4	30.77	9	69.2	13	
	Primary education	0	00.00	6	37.50	10	62.5	16	
	Illiterate	0	00.00	0	00.00	4	100	1	
Period of using gas stoves	1 - 5years	0	00.00	8	44.44	10	55.56	18	χ <sup>2</sup> =8.32 P=0.03*(S)
	6 -10years	0	00.00	6	20.00	24	80.00	30	
	11 -15years	0	00.00	0	00.00	10	100.00	10	
	>15years	0	00.00	0	00.00	2	100.00	2	
	Graduate	0	00.00	0	00.00	3	100.00	3	
Previous experience of burns	Yes	0	00.00	2	09.52	19	90.48	21	χ <sup>2</sup> =3.84 P=0.05*(S)
	No	0	00.00	12	30.76	27	69.24	39	

P> 0.05 not significant, \*P≤0.05 significant, \*\*P≤0.01 highly significant

**CONCLUSION**



The findings of the present study revealed that the structured teaching programme is more effective with the adequate knowledge gain score in experimental group compared to the control group. Enhanced knowledge regarding prevention of domestic burns should be used in developing highly effective educational programs in rural areas. Community Health Nurse can inculcate the education on prevention of fire accidents due to domestic gas leakage in the community as a part of her health promotional activities. Community can be empowered to manage the fire accidents and seek care at the appropriate health care centre to prevent the disability. Community health nurse can involve the community to participate in the educational activities in empowering women on prevention of fire accidents due to domestic gas leakage thereby aiding to reduce the incidences of fire accidents and helps in protecting the life of the people. Future studies focusing on the attitude and practice of women regarding the prevention of fire accidents and burns can be more useful to develop the educational programme in the community.

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