

“A STUDY TO ASSESS THE EFFECTIVENESS OF FIRE SAFETY MODULE ON KNOWLEDGE AND SELF-EXPRESSED PRACTICES AMONG ADULTS IN SELECTED HOUSING SOCIETY OF PUNE CITY”

¹Rushikesh Savant & ²Sonopant Joshi

¹Research Scholar, Symbiosis College of Nursing, Pune, India

²Professors, Symbiosis College of Nursing, Pune, India

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ABSTRACT

Fire is one of the major deterrents to the development of architecture and technological advancement because it can lay to waste the valued lives, works, and property. Its importance in a housing society can't be ignored due to the fact that it is important having several different occupancies under one roof. Fire safety training including demonstration of handling fire hydrant is utmost important for residents of high rise building to mitigate the disaster related to fire. These proactive arrangements and reliable fire systems are the basic core of fire safety management, as they minimize the fire risk to a very low level which is acceptable to the property owner and society at large.

Methodology

The researcher employed a quantitative technique, as well as a pre-experimental interventional study design. The convenience sampling strategy was used to pick 80 persons from a specified community in Pune City who agreed to participate in the current study.

Result

The teaching module on self-expressed fire safety practices was tested for its effectiveness and it was found that the module was effective to increase the level of knowledge among members of society; the researcher employed a paired t-test. The average Self-Expressed Practises score was 4.1 on the pre-test and 7.3 on the post-test. The null hypothesis was rejected. The post-test score for Self-Expressed Practises is much greater than the pre-test level. It is clear that after fire safety education, inhabitants' self-expressed practices toward fire safety improved dramatically.

Conclusions

It is evident that the knowledge and Self- expressed practices among adults about fire safety is improved significantly after providing a fire safety module.

KEYWORDS: Assess Effectiveness, Fire Safety Module, Self-Expressed Practices, Adults, and Knowledge.

INTRODUCTION

Disasters are on the rise, globally as well as in India. Earthquakes, fires, and floods are increasing. Any type of disaster is devastating. Fire is a great servant, but a terrible master. Historically fire is used by mankind for many purposes including

cooking, burning unwanted materials, etc. there are multiple ways fire is created rubbing material, industrial fire, chemical fire, and electric fire. Fire is very important for human beings for day-to-day activities, one cannot survive without fire. As long as the fire is within human control, it can be used for a variety of reasons. When it becomes uncontrollable by humans, it has the potential to cause massive devastation. Nonetheless, despite the availability of fire safety measures, mishaps are occasionally unavoidable. It is the deadly combo of a good servant and a bad boss. People keep fire sources in and around their homes/workplaces because they serve useful purposes. These sources can occasionally cause "unwanted" fire. If fire had no practical use, the number of fire accidents would have been far lower, because people would not have fire sources near them. Thus, the occurrence of fire-related accidents is sometimes inevitable in spite of all the safety precautions. (Okon, I., & Njoku, C. G. 2018)

It is critical to have a fundamental understanding of how a fire occurs and behaves within a structure and workplace. Fire is generated when carbon material reacts with air or oxygen and it forms combustible vapors. Nothing happens if these vapors vanish. However, if they come into touch with an ignition source, such as an open flame, they ignite. Depending on the combustibility of the ignited fuel, the fire may begin slowly with a long-smoldering period or swiftly with nearly no smoldering time. In either case, once visible flames develop, the destructive forces of the fire accelerate exponentially. (Charnley, S., Kelly, E. C., & Fischer, A. P. 2020)

In recent years, there have been several fires at housing complexes in India. Fires commonly cause injuries and, in extreme situations, fire safety training helps to reduce impact of damage and death. Every student on campus is required to receive fire safety training. Both learnings about fire safety and putting it into practice are critical. It has been demonstrated that the aspect of fire safety awareness is insufficient. Fire training is an essential component of many professions like engineering, hotel management, culinary arts, and many more. Recruitment of fire safety officers in all industries was also made mandatory as per factory acts. In each industry health, safety, and environmental department is established and each team member has undergone specific training related to fire safety. Training is essential for each of the concerned professionals including residents of high-rise buildings as it is a devastating event.

Pala 1997 also identified that parents, teachers, and students are deficient in knowledge regarding emergency preparedness in schools and housing societies. This study's sample population was designed to represent 30% of the total number of students and employees. The study's two main goals were to examine students' and staff's levels of fire safety awareness in terms of emergency situations. The purpose of the study was to measure the existing understanding and their expressed practices regarding fire safety components including their relation between these two variables, the further researcher intended to see the effectiveness of the developed module regarding fire safety including their association with demographic characteristics. The outcome of the research will be benefited to the residents of housing societies residence in improving their awareness and skillset to tackle the devastating fires in the residential premises so as to save many lives

MATERIAL AND METHODS

The study was conducted on people from several housing societies in Pune. An experimental one group pre-test post-test method was used. The nonprobability convenient sampling strategy was used for the study, and it was applied to people from the selected housing society in Pune City. The sample size was 80 which satisfied the study's inclusion criteria. A knowledge questionnaire was developed and administered to evaluate the adults on fire safety from a selected housing society. The data collection was done using various instruments like demographic details of the sample and

questionnaires to assess their knowledge and self-expressed practices. There were 25 questions to assess knowledge and 10 questions included to assess their self-expressed practices. The validity was done with 12 experts from the field of health sciences, psychologists, laymen, and engineering. Reliability was done using the test-retest method and calculated using Pearson’s correlation coefficient and it was 86 & (r=0.86)

RESULTS

The Results Were Divided Into 5 Sections

I. Section 1: Distribution of Samples (Residents)

Table: 1 Distribution of Samples

Demographic variable	Freq	%
Age		
18-27 years	16	20.0%
28-37 years	18	22.5%
38-47 years	28	35.0%
48 and above	18	22.5%
Gender		
Male	52	65.0%
Female	28	35.0%
Education		
Primary	11	13.8%
Secondary	17	21.3%
Diploma	17	21.3%
Graduation and above	35	43.8%
Occupation		
Housewife	14	17.5%
Private sector	29	36.3%
Government sector	16	20.0%
Self-own works	21	26.3%
Does your society have fire safety plan		
Yes	80	100.0%
No	0	0.0%
Have you ever undergone Fire safety Training		
Yes	13	16.3%
No	67	83.8%

Table 1 shows that the participants included in the study were age group 18 years and over in which the majority of the participants were from age group of 38-47 years followed by 28-37 years and 48 years and above. Male participants were more (65.00 %) and educated participants (Graduation & Above) were in the majority. The majority of the participants were working in the private sector (36.3%). Surprisingly all participants responded that their society is having fire safety plan whereas only 16.3% of participants have attended fire safety training.

II. Section 2: Knowledge and Self- Expressed Practices of Fire Safety

Table: 2 Existing Knowledge About Fire Safety Among Participants

Dependant Variable	Existing	
	Freq	%
Poor (score 0-8)	23	28.8%
Average (score 9-16)	49	61.3%
Good (score 17-25)	8	10.0%

The above Table 2 reveals that the majority of the participants showed average scores while only 10 % of the participants were in good scores, it indicates that the residents of Pune City were showing inadequate knowledge regarding fire safety. Among these participants, 28.8 % participants have shown the poor score

Table: 3 Existing Self- expressed practices about Fire Safety

Skills	Pretest	
	Samples	%
Poor (score 0-3)	44	55.0
Average (score 4-6)	25	31.3
Good (score 7-10)	11	13.8

The above Table 3 explains self-expressed skills and reveals that the skill score of the participants reveal that 55 % of the participants are having poor practices and only 13.8 % of participants having a good score of self-expressed practices

III. Section: 3 Effectiveness of Fire Safety Education on Knowledge and Self- Expressed Practices Regarding Fire Safety

Table: 4 Effectiveness of Education on Knowledge Regarding Fire Safety

Dependant variable	Existing		After intervention	
	Freq	%	Freq	%
Poor (score 0-8)	23	28.8%	2	2.5%
Average (score 9-16)	49	61.3%	56	70.0%
Good (score 17-25)	8	10.0%	22	27.5%

Table 4 shows that after administration of fire safety module knowledge and self expressed practices improved substantially as evidenced by the poor score observed only among 2.5 % participants after intervention.

Table: 5 Effectiveness of Fire Safety Education on Self- Expressed Practices Regarding Fire Safety

Skills	Pretest		Posttest	
	Freq	%	Freq	%
Poor (score 0-3)	44	55.0%	0	0.0%
Average (score 4-6)	25	31.3%	19	23.8%
Good (score 7-10)	11	13.8%	61	76.3%

In pretest, 55% of the residents had poor Self- expressed practices (score 0-3), 31.3% of them had average Self- expressed practices. In the post-test, 23.8% of the residents had average Self- expressed practices and 76.3% of them had good score regarding fire safety. This indicates that the Self- expressed practices regarding fire safety among residents improved remarkably after fire safety education.

Table: 6 Paired T-Test for the Effectiveness of Fire Safety Education on Knowledge Regarding Fire Safety

	Mean	SD	T	df	p-value
Pretest	10.7	3.5	19.2	79	0.000
Posttest	15.0	3.1			

The researcher used a paired t-test to determine the effectiveness of fire safety education The pretest average knowledge score was 10.7, which improved to 15 in the posttest. The knowledge score in the posttest is significantly greater than the knowledge score in the pretest. It is clear that citizens' awareness of fire safety improved dramatically

following fire safety education.

Table: 7 The Effectiveness of Fire Safety Education on Self- Expressed Practices Regarding Fire Safety

	Mean	SD	T	df	p-value
Pretest	4.1	2.0	18.0	79	0.000
Posttest	7.3	1.2			

The researcher used a paired t-test to determine the effectiveness of fire safety instruction on self-expressed fire safety practises. In the pre-test, the average Self-Expressed Practises score was 4.1, which jumped to 7.3 in the post-test. The post-test score for self-expressed practices is much greater than the pretest score. It is clear that after fire safety education, inhabitants' self-expressed practices toward fire safety improved dramatically.

IV. Section: 4 Analysis of Data Related to the Correlation Between Knowledge and Self- Expressed Practices Among Residents Regarding Fire Safety

Table: 8 Correlation between knowledge and Self- expressed practices among residents regarding fire safety

Statistic	value
R	0.06
T	0.53
p-value	0.598

Researcher used Pearson’s correlation coefficient to assess the correlation between knowledge and Self- expressed practices among residents regarding fire safety. Pearson’s correlation was found to be 0.06 which is positive (>0) which indicates positive correlation, more the knowledge among residents regarding fire safety, better will be their Self-expressed practices regarding fire safety. The strength of this correlation coefficient to assess the correlation between knowledge and Self- expressed practices among residents regarding fire safety was tested using t-test for the correlation coefficient. T-value for this test was 0.53 with 78 degrees of freedom. The corresponding p-value was large (greater than 0.05), the null hypothesis was rejected. It is evident that though the correlation between knowledge and Self- expressed practices among residents regarding fire safety, the correlation is not significant.

V. Section: 5 Analysis of Data Related to the Association Of Knowledge and Self- Expressed Practices with Selected Demographic Variables

Table: 9 Association of Knowledge Among Residents Regarding Fire Safety With Selected Demographic Variables

Demographic variable	Knowledge			p-value	
	Poor	Average	Good		
Age	18-27 years	5	9	2	0.999
	28- 37 years	5	12	1	
	38- 47 years	8	17	3	
	48 and above	5	11	2	
Gender	Male	17	29	6	0.437
	Female	6	20	2	
Education	Primary	4	7	0	0.543
	Secondary	3	12	2	
	Diploma	3	11	3	
	Graduation and above	13	19	3	
Occupation	Housewife	2	11	1	0.559
	Private sector	9	18	2	
	Government sector	7	7	2	

	Self-own works	5	13	3
	No	20	43	4

The researcher tried to find out the association of the findings with demographic variables and found that none of the variables is associated

Table: 10 Association of Self- Expressed Practices Among Residents Regarding Fire Safety with Selected Demographic Variables

Demographic variable		Skills			p-value
		Poor	Average	Good	
Age	18-27 years	9	3	4	0.632
	28- 37 years	9	8	1	
	38- 47 years	16	9	3	
	48 and above	10	5	3	
Gender	Male	26	17	9	0.412
	Female	18	8	2	
Education	Primary	5	4	2	0.655
	Secondary	10	3	4	
	Diploma	9	7	1	
	Graduation and above	20	11	4	
Occupation	Housewife	9	4	1	0.241
	Private sector	14	13	2	
	Government sector	11	3	2	
	Self-own works	10	5	6	
Have you ever underwent Fire safety Training	Yes	7	4	2	1.000
	No	37	21	9	

It is observed that none of the demographic variables is associated

DISCUSSIONS

The current study sought to analyse the impact of the Fire Safety Module on knowledge and self-expressed practises among adults in a Pune City housing society. The adults' data was collected, and the results were evaluated by an investigation. The study's findings demonstrated that the fire safety module provided increased adults' awareness of fire safety in selected housing societies. This suggests that citizens' awareness of fire safety improved significantly following fire safety education.

The correlation between knowledge and Self- expressed practices among residents regarding fire safety was found to be 0.06 which indicates a positive correlation, the more knowledge among residents regarding fire safety, the better will be their Self- expressed practices regarding fire safety.

The above findings of the study is supported by the study conducted by Islam M. M. which concluded that public awareness is meant to avoid many incidences of destruction due to fire and loss of lives. Islam, M. M., & Adri, N. (2008).

Another study conducted by Helan, W., concluded that the fire education system in China was investigated in regards to fire safety quality and awareness among local residents and revealed that in spite of periodical education on fire and safety, there was very minimal improvement in fire and safety quality of the public

CONCLUSIONS

The overall study result indicates that the fire safety education on knowledge and Self- expressed practices will help to improve the knowledge and Self- expressed practices among adults of selected housing society of Pune City. Through the result It is evident that the knowledge and Self- expressed practices among adults about fire safety is improved significantly after providing fire safety module.

Conflict of Interest

- NA

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REFERENCES

1. Basir, T. B., & Chelliapan, S. (2016). *The Importance of Fire Safety Knowledge: A Case Study in a Malaysian city. Journal of Infertility and Reproductive Biology*, 4(3), 51-57.
2. Bytnerowicz, A., Arbaugh, M., Schilling, S., Frączek, W., & Alexander, D. (2008). *Ozone distribution and phytotoxic potential in mixed conifer forests of the San Bernardino Mountains, southern California. Environmental Pollution*, 155(3), 398-408.
3. Charnley, S., Kelly, E. C., & Fischer, A. P. (2020). *Fostering collective action to reduce wildfire risk across property boundaries in the American West. Environmental Research Letters*, 15(2), 025007.
4. Helan, W., Jiang, Z. H. U., Zheng, Y., & Jun, T. (2014). *Study on administrative and educational measures of China urban public fire safety education. Procedia Engineering*, 84, 151-165.
5. Islam, M. M., & Adri, N. (2008). *Fire hazard management of Dhaka City: addressing issues relating to institutional capacity and public perception. Jahangirnagar Planning Review*, 6(6), 57-68.
6. Johnston, D., Tarrant, R., Tipler, K., Coomer, M., Pedersen, S., & Garside, R. (2011). *Preparing schools for future earthquakes in New Zealand: Lessons from an evaluation of a Wellington school exercise. Australian Journal of Emergency Management, The*, 26(1), 24-30.
7. Okon, I., & Njoku, C. G. (2018). *The Location of Fire Hydrants and Implications to Fire Disaster Management in Calabar, Cross Riv-er State, Nigeria. IOSR J. Humanit. Soc. Sci*, 23, 42-55.
8. Shokouhi, M., Nasiriani, K., Cheraghi, Z., Ardalan, A., Khankeh, H., Fallahzadeh, H., & Khorasani-Zavareh, D. (2019). *Preventive measures for fire-related injuries and their risk factors in residential buildings: a systematic review. Journal of injury and violence research*, 11(1), 1.

