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ASSESSMENT OF AWARENESS AND TRAINING REGARDING FIRE EMERGENCIES AMONG UNDERGRADUATE STUDENTS OF 1ST AND 2ND PROFF OF GANDHI MEDICAL COLLEGE, BHOPAL – AN INTERVENTIONAL STUDY

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ABSTRACT

Background: One of the essential components in building infrastructure plans in medical college and hospital settings is fire safety and provision of fire safety systems. Many injuries and deaths could be caused by fire accidents in hospitals. Awareness regarding the use of these systems in various instances is essential to all health care workers including doctors, medical students and associated staff.

Objectives: 1) To determine awareness regarding fire emergencies among undergraduate students of 1st and 2nd proff of Gandhi Medical College. 2) To train participants about preventive methods related to fire safety. 3) To reassess increase in awareness after the interventional program.

Methods: This was an educational interventional study conducted on undergraduate students of 1st and 2nd proff of Gandhi Medical College, Bhopal over 3 months duration.

Results: The awareness among students of 1st and 2nd proff who were assessed before intervention was 53.47%. The participants were trained under the guidance of an expert who has been working in this field for the past 20 years. After the intervention, mean increment in awareness was found to be 87.9% from 53.5% which meant a total increase in awareness by 34.5%.

Conclusion: The knowledge of the participants about fire safety was inadequate, which showed improvement after the educational intervention.

KEYWORDS : fire emergencies, fire safety system, interventional study

INTRODUCTION

Fire is one of the most destructive, disruptive and costly loss, causing damage to the people and property.[1] Fire can happen any time, any place, at home or at your workplace, or in a hospital or in public places like theatres, malls etc.[2] Fire safety is crucial component and concerns in building infrastructure plans.[3] Arrangements of fire safety system like emergency exits, different types of fire extinguishers, safe assemble area, fire hydrant system is mandatory particularly in hospital building settings.[3] Fires are pretty common in hospital operating rooms and have also occurred in clinical offices.[3] It is estimated that 600 surgical fires occur yearly in hospitals.

Related to fire safety and prevention rules and regulation are made in national and state level like the National Building Code of India, 2005, is the basic model code, on matters relating to building construction and fire safety.[5] National Crime Records Bureau (NCRB) of the home ministry report showed that Madhya Pradesh accounted 2305 deaths in fire accidents in 2014.[6]

Fire remains the leading cause of lives and property loss at industrial and commercial facilities worldwide and fire could lead to the premature winding up of an organization no matter how big it is.[7] Fire is an assertive hazard in the workplace.[2] Factors such as carelessness, negligence and lack of fire safety awareness are some of the dominant causes of fire outbreaks.[7]

The fortunate use of any type of fire equipment depends upon the elements such as equipment, maintenance and training.[2] Knowledge regarding the use of fire emergency systems is essential to all the health care workers.[3] There exists three fundamental elements which cause fire viz. fuel source, sufficient heat to ignition. The existence of oxygen and these 3 are commonly increasing the risk of fire accidents.[8]

Awareness regarding the use of these systems in various instances is essential to all health care workers including doctors, medical students and associated staff. Thus the study aims, 1) To determine awareness regarding fire emergencies among undergraduate students of 1st and 2nd proff of Gandhi Medical College. 2) To train participants about preventive methods related to fire safety. 3) To reassess increase in awareness after the interventional program.

METHODOLOGY

This was an educational interventional study conducted on undergraduate students of Gandhi Medical College, Bhopal. Permission was taken from the institutional ethical committee of the college and from the concerned authorities. Consent was obtained by the 1st and 2nd proff. undergraduates after explaining the purpose of the study. The study was conducted over a period of 3 months (September 2018 to November 2018). A total of 247 students participated in the study but by the end only 213 participants were left for analysis. Thus loss to follow up was 34 participants. A semi designed semi structured questionnaire was used to determine awareness regarding fire emergencies and safety measures. The students were asked to fill the questionnaire at the start of the study and the observations were recorded.

After a duration of 1 month, they were given trainings including demonstration of working of fire-extinguisher and procedures of safe fire escape for the duration of 1 week, by the professional [Assistant Fire Officer, Fire brigade (BMC) Bhopal]. The participants were trained under the guidance of an expert who has been working in this field for the past 20 years. After successful training programme, with a gap of 1 month, the study participants were again asked to fill the questionnaire.

Finally the data was entered into MS excel 2007 and analysis was done with the help of Epi info Version 7.2.2.2

RESULTS

A total of 247 students participated in the study. Out of which only 213 were left for the analysis.

Awareness about fire safety among the students before and after the intervention is depicted in table 1. Previously, around 55% of students were correctly aware about fire emergencies

and measures what to do in case of fire accident. The table shows question-wise distribution of students about their awareness. Around 35% of students were familiar with their work place surroundings which increased to 97.2% following the intervention. About 91% students correctly answered for correctly doing the things after the intervention, from 64.8% previously.

Table 1: Awareness About Fire Safety Among The Students Before And After The Intervention

S. No	Questions regarding awareness about	Pre (correct)		Post (correct)		P value
		n=213	%	n=213	%	
1.	Students familiarized with the surrounding	74	34.7	207	97.2	< 0.000*
2.	Things to be done when fire is caught	138	64.8	193	90.6	< 0.000*
3.	Things to be done when caught in smoke	70	32.9	163	76.5	< 0.000*
4.	Things to be done when fire catches clothes	170	79.8	188	88.3	0.024*
5.	First call on noticing fire	165	77.5	180	84.5	0.083
6.	Fire emergency number	88	41.3	195	91.5	< 0.000*
7.	Steps of handling fire	136	63.8	191	89.7	< 0.000*
8.	About exit points in case fire is caught	112	52.6	178	83.6	< 0.000*
9.	Preventive measures for fire at work place	148	69.5	191	89.7	< 0.000*
10.	Direction of fire extinguisher nozzle	124	58.2	200	93.9	< 0.000*
11.	Preventive measures before fire emergency	128	60.1	182	85.4	< 0.000*
12.	About fire triangle	122	57.3	189	88.7	< 0.000*
13.	Types of fire	118	55.4	192	90.1	< 0.000*
14.	Operating a fire extinguisher	88	41.3	187	87.8	< 0.000*
15.	Types of fire extinguisher	96	45.1	186	87.3	< 0.000*

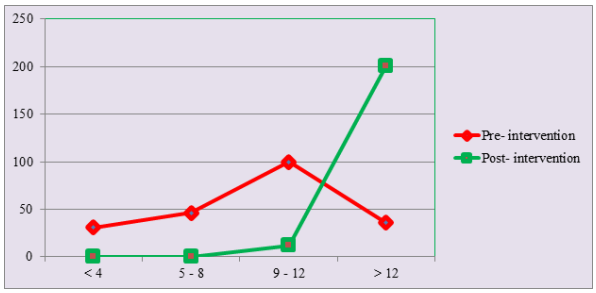
*Statistically significant p- value

Following the intervention, there was a significant increase ($p<0.000$) in awareness among students about the preventive steps to be taken in different conditions when fire is been caught. Approximately 30% increase in knowledge was observed in the students regarding the exit points of the institution. Also awareness among students, about different types of fire extinguishers and procedures to operate them, was also increased. The increment was about 42% and 46% respectively. Chi- square test was applied to calculate p-value. Table 2 depicts distribution of study participants on the basis of number of questions correctly answered before and after the training. Initially, only 16.9% participants scored >12 which increased to 94.4% afterwards. It is clearly seen that there was a marked increment in the scores of students after the intervention. This could we clearly understood in figure 1.

Table 2: Distribution According To Number Of Correctly Answered Questions

S. No	Score	Number of questions correctly answered	Pre-intervention		Post-intervention	
			n=213	%	n=213	%
1	I	≤4	31	14.6	0	0.0
2	II	5 - 8	46	21.6	0	0.0
3	III	9 - 12	100	46.9	12	5.6
4	IV	> 12	36	16.9	201	94.4

Figure 1: Graphical Representation Of Improvement In Scores Of Participants Before And After The Intervention



X-AXIS: Score range of participants
Y-AXIS: Number of participants

DISCUSSION

In the present study, around 55% of students were correctly aware about fire emergencies and measures what to do in case of fire accident. In a study by **Rohini S. Kulkarni et al, 2016**[2], also showed that the participants had good knowledge about fire safety, except on the extinguishers types.

In our study all the participants received the training of fire safety, following which 87.3% participants were aware about types of fire extinguishers and 87.9% knew how to operate it. The findings were similar to the study by **Rohini S. Kulkarni et al, 2016**[2]. While it was dissimilar to the study findings by **Emma M. Muindi, 2014**. In a study by **Yeturu SK et al, 2016**[3], only 15.2% participants were aware about different types of fire extinguishers.

The findings of current study showed at after training 83.6% were aware of the exit points in case fire is caught. Similar finding was observed in study by **Rohini S. Kulkarni et al, 2016**[2], where 83.3% of respondents knew about the closet fire extinguisher from their workrooms.

In our study around 90% of the participants knew about the emergency number which was in contrast to the study by **Rohini S. Kulkarni et al, 2016**[2], where 72.28% participants did not have this awareness. While in study by **Yeturu SK et al, 2016**[3], around 48% participants knew about the number.

In current study initially only 57% participants had awareness about fire triangle and its components which was similar to a study conducted by **Yeturu SK et al, 2016**[3].

CONCLUSION

From the study, it is concluded that the students had awareness about fire safety measures, which was further escalated by the training program. Institution should make arrangements for fire safe equipments and should regularly organize training schedule for the staff as well as students.

Thus it is recommended that regular training workshops should be planned to increase the awareness of medical student about first aid and fire safety in all medical college. Also, short course regarding fire safety and first aid should be included in UG curriculum.

LIMITATION

As the study was conducted on a specific group of population so the results cannot be generalized. Also loss to follow was observed.

DECLARATION

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Conflict of interest: *None declared*
Ethical approval: *The study was approved by Institutional ethics committee*

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