

AWARENESS ON DISASTER MANAGEMENT AMONG HIGH SCHOOL STUDENTS IN VIJAYAWADA CITY: AN INTERVENTIONAL STUDY

Environmental Science

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ABSTRACT

Background: A Disaster is a serious disruption occurring over a short or long period of time that causes widespread human, material, economic or environmental loss which exceeds the ability of the affected community or society to cope using its own resources¹. The key to reducing the loss of life, personal injuries, and damage from natural disasters is widespread public awareness and education². Disaster management includes prevention, mitigation, preparedness, response, and recovery for which, regular training and awareness activities are needed especially among students to greatly reduce the impact of disasters.

Materials and Methods: It was an educational interventional design with an exploratory research approach adopting nonprobability purposive sampling technique, which was conducted among 178 students of government high school, aged 16-18 years in Vijayawada from July 2019 to September 2019. A pre-tested structured questionnaire was used to collect data. Data collected was analyzed with SPSS v20.0.

Result: Awareness regarding disaster management among high school students was found to be 59.9 % and after the intervention, the awareness level raised to 90.6 %. Paired t-test showed that there was statistically significant ($p < 0.05$) improvement in awareness among students after an educational intervention.

Conclusion: These findings emphasize that the extent of knowledge is not yet satisfactory and there is a severe need of providing knowledge to school children. Disaster management chapters should be incorporated as a part of the regular school curriculum for all students. Effective, purposeful training and awareness programs are to be timely conducted. Many Campaigns and NGOs should be encouraged to spread awareness among schools and the public.

KEYWORDS

Disaster, Management, awareness, intervention

INTRODUCTION:

A natural disaster is a natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage³.

Various phenomena like earthquakes, landslides, volcanic eruptions, floods, hurricanes, tornadoes, blizzards, tsunamis, cyclones, and pandemics are all-natural hazards that kill thousands of people and destroy billions of dollars of habitat and property each year. However, the rapid growth of the world's population and its increased concentration often in hazardous environments has escalated both the frequency and severity of disasters⁴. With the tropical climate and unstable landforms, coupled with deforestation, unplanned growth proliferation, non-engineered constructions make the disaster-prone areas more vulnerable. Developing countries suffer more or less chronically from natural disasters due to ineffective communication combined with insufficient budgetary allocation for disaster prevention and management

India's increasing population and extensive unscientific constructions mushrooming all over, including multi-storied luxury apartments, huge factory buildings, gigantic malls, supermarkets as well as warehouses and masonry buildings keep - India at high risk. During the last 15 years, the country has experienced 10 major earthquakes that have resulted in over 20,000 deaths. Vijayawada city falls under seismic zone III and now is at a High Risk of the Earthquake disaster, according to a recent NDMA report 2019. In India, almost 85% of its geographical area is vulnerable to one or multiple natural disasters⁷.

Disaster Management can be defined as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response, and recovery to lessen the impact of disasters⁶.

Apart from causing deaths and severe ill health, disasters also lead to large-scale displacement, injuries, epidemics, and substantial economic losses to the communities. Therefore, there is always a need to develop a multifaceted approach involving all stakeholders from different disciplines and sectors of the society for which, the foremost measure is to have a well informed and aware citizens and school is the best place of learning of such kind.

It has been noted that school children are the most adversely affected by natural hazards, suffering both physical and mental trauma. Various studies have shown an overall reduction in learning outcomes, a drop in attendance, and lower academic performance. Further, collapse or severe damage to infrastructure such as school buildings during a disaster disrupts the education process. Ensuring the security and safety of school children is the fundamental responsibility of any society, especially in the context of India, where more than 36% of its population is below 17 years and most of their time is spent in schools.

When a disaster strikes, schools as an integral part of the community play an important role by sheltering, building, and enhancing the resilience and cohesiveness amongst the community. Moreover, schools are mostly transformed into temporary shelters for the victims after disasters. During such crucial time, Students has to take up the duty as sentinel rescuer and helps in providing essential first aid care and emotional support to the victims. All these factors emphasize the need for awareness of various types of disasters, mechanism, characteristics, and their effects and practical training regarding proper disaster response in schools for students.

METHODS:

It was an educational interventional design with an exploratory research approach adopting a non-probability purposive sampling technique. The survey method was used for the conduct of the study as the purpose of the study is to explore the awareness on Disaster management among high school students. The population under study is the high school students aged 16-18 years and the study was conducted on 178 randomly selected students studying in SSR & CVR government school of Vijayawada from July 2019 to September 2019, after getting prior permission from the school authority.

A pre-tested structured questionnaire datasheet which included questions in three spectrums:

1. Knowledge about the characteristics, mechanisms, and effects of various disasters.
2. Awareness on Do's and Don'ts before, during and after the disasters.
3. Awareness on their local surroundings prone to natural hazards & contents and usage of first aid and emergency kits.

Questions of all three sections were mixed and not arranged in any order to avoid bias. Most of the questions will have answers as 'yes' and

'no'. To begin with, permission was sought from the school authority and students were well explained about the purpose of the study. Their willingness was taken prior to the study and informed consent was sought. 178 students of age group 16-18 years were included as study participants. The validity of the tool in the questionnaire was drafted by the experts of the concerned field. After certain modifications, the final draft of the questionnaire was prepared. The reliability coefficient came out to be 0.88 (88%). A pilot study on 10% of participants was done and accordingly, changes were made in the questionnaire. After, the questionnaire was filled by all the participants, a PowerPoint presentation with the description of disasters and their management was displayed and properly explained with didactic communication. The same questionnaire was distributed again after the educational intervention, to be filled out by same participants. In this manner, pre and post-intervention data were collected. The data collected was analyzed with the help of SPSS v20.0 software then compiled in tabular form, appropriately.

RESULTS:

A total of 178 students participated and completed the pre and post-interventional survey. Out of which 49(27.5%) were male and 129(72.47%) were female. The mean age $\pm$ SD of the participants was 17.01 ± 0.384 years, ranging from 16-18 years. Table 1, shows the overall awareness on disaster management raised from 59.9% to 90.6% after an educational intervention. Table 2, reveals a statistically significant improvement in the mean score of awareness on disaster management among students following the implementation of an educational interventional program from 14.38 ± 1.151 to 21.75 ± 0.830 ($p < 0.001$) by applying Paired t-test. Media plays a significant role in creating awareness among school students and the public. Figure 1, shows the involvement of various media like television 50.6%, newspaper 22.5%, mobile/SMS 19.1%, Internet 5.1%, and radio 2.8% helped in gaining information on disasters from the student's point of view.

Table1. Awareness regarding Disaster Management among high school students

s.no	CHARACTERISTICS AND MECHANISM OF DISASTERS	BEFORE INTERVENTION			AFTER INTERVENTION		
		BOYS n (%)	GIRLS n (%)	TOTAL n (%)	BOYS n (%)	GIRLS n (%)	TOTAL n (%)
1	Knowledge regarding the difference between natural and man-made disaster	44(89.8)	108(83.7)	152(85.4)	46(93.9)	129(100.0)	175(98.3)
2	Knowledge on the characteristics and mechanism of earthquake	30(61.2)	119(92.2)	149(83.7)	43(87.8)	119(92.2)	162(91.0)
3	Knowledge on the device & scale used to measure earthquake	11(22.4)	18(14.0)	29(16.3)	40(81.6)	110(85.3)	150(84.3)
4	Awareness regarding Vijayawada city falls under Seismic zone III	3(6.1)	11(8.5)	14(7.9)	38(77.6)	102(79.1)	140(78.7)
5	Knowledge regarding Induced Seismicity	21(42.9)	55(42.6)	76(42.7)	39(79.6)	115(89.1)	154(86.5)
6	knowledge on the characteristics and mechanism of flood	27(55.1)	81(62.8)	108(60.7)	37(75.5)	124(96.1)	161(90.4)
7	Awareness on the flood-prone areas in Vijayawada	16(32.7)	69(53.5)	85(47.8)	37(75.5)	108(83.7)	145(81.5)
8	Knowledge on the characteristic and mechanism of cyclone	25(51.0)	59(45.7)	84(47.2)	43(87.8)	115(89.1)	158(88.8)
9	Awareness on areas more prone for cyclone in Vijayawada	25(51.0)	74(57.4)	99(55.6)	40(81.6)	124(96.1)	164(92.1)
10	Knowledge on characteristic and mechanism of landslides	24(49.0)	70(54.3)	94(52.8)	44(89.8)	120(93.0)	164(92.1)
11	Awareness on areas more prone for landslides around their surroundings	25(51.0)	61(47.3)	86(48.3)	38(77.6)	127(98.4)	165(92.7)
12	Knowledge about various steps involved in disaster management cycle	19(38.8)	60(46.5)	79(44.4)	43(87.8)	109(84.5)	152(85.4)
DO'S & DON'T'S							
13	If earthquake occurs, I will choose to be on open ground rather than inside the building	40(81.6)	107(82.9)	147(82.6)	40(81.6)	123(95.3)	163(91.6)
14	If earthquake occurs, and I am inside the building, I know to duck & cover under steady object	31(63.3)	72(55.8)	103(57.9)	39(79.6)	120(93.0)	159(89.3)
15	If disaster happens, I know I have to move away from power lines, false ceiling and walls	42(85.7)	119(92.2)	161(90.4)	36(73.5)	127(98.4)	163(91.6)
16	If earthquake occurs, I will use steps rather than elevator	41(83.7)	116(89.9)	157(88.2)	42(85.7)	128(99.2)	170(95.5)
17	Knowledge to turn off the gas cylinder	35(71.4)	119(92.2)	154(86.5)	38(77.6)	127(98.4)	165(92.7)
18	Knowledge to turn off the electric power	34(69.4)	120(93.0)	154(86.5)	44(89.8)	125(96.9)	169(94.9)
19	If flood occurs, I will shift from low-lying areas to higher altitude areas	44(89.8)	118(91.5)	162(91.0)	45(91.8)	126(97.7)	171(96.1)
20	Awareness to drink boiled/chlorinated water during floods	26(53.1)	91(70.5)	117(65.7)	39(79.6)	126(97.7)	165(92.7)
21	I know emergency number for disaster management in India as '108' and will call in case of disaster	21(42.9)	57(44.2)	78(43.8)	40(81.6)	125(96.9)	165(92.7)
FIRST AID & EMERGENCY KIT							
22	Knowledge on the contents inside a First-Aid kit	29(59.2)	113(87.6)	142(79.8)	44(89.8)	124(96.1)	168(94.4)
23	Knowledge on how to use First-Aid kit	22(44.9)	70(54.3)	92(51.7)	38(77.6)	120(93.0)	158(88.8)
24	Knowledge on the contents inside the Emergency supply kit	10(20.4)	29(22.5)	39(21.9)	39(79.6)	125(96.9)	164(92.1)
OVERALL AWARENESS LEVEL (%)		54.8	61.9	59.9	82.7	93.6	90.6

Table2. Comparing mean score using Paired-t-test

Awareness level	Mean score	Mean difference	SD	df	t-test	P-value
Pre-test	14.38	7.31	5.812	177	-16.919	<0.001
Post-test	21.75					

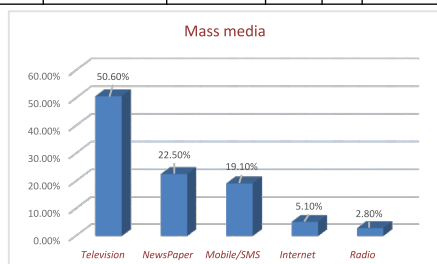


Figure1. Media via which students gained knowledge on Disaster management

DISCUSSION:

The outcome revealed that out of 178 students 59.9% of the participants (before intervention) and 90.6% of the participants (after intervention) knew disaster management. In a similar study by Rajesh et al in American Journal of Disaster Management the level of awareness was found to be 85.78%. In a similar study by Priyesh Markole et al⁵ in Indian Journal of community medicine and Public health the level of awareness was found to be 98.2%.

In another finding of present study 57% of participants before and 89% after, the intervention was able to identify the disasters by their characteristic features whereas, a study by Tuladhar⁶ had the finding of 94% and Priyesh Markole et al⁵ study had the finding of 69% in a similar question. So present study emphasizes that the level of awareness among school-going children was not satisfactory initially but substantially improved after an educational intervention.

In the present study, contents inside an emergency supply kit were

known to 61.1% of participants before and 93.4% after the intervention. In a similar previous study by Rajesh et al⁹ 67% of respondents knew about the contents of the supply kit. This emphasizes the need of generating knowledge about emergency supply kits and First-aid kits for the students.

In the present study, knowledge about the mechanism of earthquake increased to 90.6% from 56% after the intervention. Whereas, in a study by Tuladhar et al⁸ 94% of students knew about the mechanism of earthquake. Safety measures to be followed during an earthquake were known to 59.6% of the participants before and 88.5% after the intervention.

Awareness of local geographical sites prone to natural hazards like earthquakes, cyclones, and floods was known to 67.1% of participants before and 91.7% after the intervention.

In the present study, awareness on Do's and don'ts before, during, and after disasters were known to 63.1% of participants before and 90.3% after the intervention. All These findings emphasize the necessity to enrich the students' knowledge regarding various aspects of disaster causation and their management at various levels.

CONCLUSION:

These findings emphasize that the extent of knowledge is not yet satisfactory and there is a severe need of providing knowledge to the school children. Academic curriculum and mock drills could help familiarize students with their surroundings and provide insights into disaster risk reduction and preparedness measures, emergency relief, and long-term recovery. Students are the strong elements who can disseminate the information to the wider sections of society and the social force who, can help present and reduce the risk of disasters. Effective, purposeful training and awareness programs are to be timely conducted to establish an active, experiential, and participatory learning process between students and institutions to develop the concept of resilience and how to anticipate, absorb and adapt to disaster events. Thus, the academic curriculum on disaster management should be made compulsory and also should have a creative approach where traditional wisdom and local knowledge can be used to prevent and mitigate the social, economic, and psychological effects of disasters.

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