

A Study to Evaluate the Effectiveness of Awareness Programme on Knowledge Regarding Disaster Preparedness For Common Natural Disasters among the Adults Residing at Selected Rural Areas of Dehradun, Uttarakhand

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Abstract

Disasters have a huge impact on humans, environment and economy throughout the globe. Preparedness for disasters is critical for individuals, households, businesses, organizations and communities, but many remain unprepared. India has been vulnerable to a large number of natural and human-made disasters on account of its unique geo-climatic and socio-economic conditions. The study was conducted to evaluate the effectiveness of awareness programme on knowledge regarding disaster preparedness for common natural disasters among the adults residing at selected rural areas of Dehradun, Uttarakhand. A quasi experimental study using non-equivalent control group pre-test post-test design was used. Purposive sampling technique was used to select 80 adults: 40 each in control group and experimental group. Data was collected using structured knowledge questionnaire. Collected data was analyzed by descriptive and inferential statistics using SPSS-16 programme. The findings showed that the pre-test mean knowledge score among the adults of control group was 15.88 and experimental group was 15.35. The post-test mean knowledge score among the adults of control group was 16.02 whereas in experimental group it was 30.05. In post-test, in control group, maximum 62.5 % adults had average knowledge, 30% had poor knowledge and 7.5% had good knowledge, whereas in experimental group, maximum 82.5% adults had good knowledge, 17.5% had average knowledge and none had poor knowledge. Hence it was concluded that the awareness programme had significant impact on improving knowledge of adults regarding disaster preparedness for common natural disasters.

Key Words: *Effectiveness, awareness programme, disaster preparedness, common natural disasters, adults.*

Introduction

Disasters are not confined to any particular part of the world; they can happen anywhere, at any time and can have effect on anyone.¹ A disaster refers to any occurrence disrupting the normal conditions of existence and causing a level of suffering that exceeds the normal capacity of adjustment of the affected community². Preparedness for disaster consists of activities aimed at improving response activities and coping capabilities¹. Disaster Preparedness is critical for all, but still many remain unprepared.

Disasters have a huge impact on humans, environment and economy around the world. EM-DAT data showed that each year 6,873 natural disasters worldwide were recorded, which claimed 1.35 million

lives or almost 68,000 lives on average (between 1994 and 2013). Among the continents, Asia bore the highest burden of disasters, with total 3.3 billion people affected in China and India³. In 2014, Asia accounted for 69.5% of reported disaster victims worldwide (against 80.7% for the 2004-2013 decade's average), America accounted 22.8% (against 4.9% on average for the 2004-2013 average) and Africa accounted for 5.5% (against 14% on average for 2004-2013). Europe accounted for 2% of all the natural disasters victims (against 0.3% for 2004-2013 average) and Oceania accounted for 0.12% (against 0.10% according to the 2004-2013 average). With 64.6% of worldwide natural disasters reported costs, Asia suffered the highest damages in 2014, followed by the Americas (26.0%) and Europe (7.8%)⁴.

The five countries that were most often hit by the natural disasters in the year 2014 and together accounting for 31.1% of total occurrence were China, the United States, India, Japan and the Philippines. These countries experience the highest number of disaster events year after year⁴. India is vulnerable to different types of disasters due to its unique geo-climatic and socio-economic conditions. It is highly vulnerable to earthquakes, floods, droughts, cyclones, landslides, avalanches and forest fires etc.⁵ The five distinctive regions in the country i.e. the Himalayan region, the alluvial plains, the hilly part of the peninsula, and the coastal zone have their own particular problems. While the plain areas are affected by floods, the Himalayan region is prone to earthquakes and landslides. The desert areas are affected mostly by droughts and famine while the coastal zone is more susceptible to cyclones and storms. The natural geological setting of the country is one of the chief cause for its increased vulnerability to different disasters⁵.

The concept of disaster preparedness includes measures aimed towards enhancing life safety when a disaster occurs, like protective actions during an earthquake, flood or terrorist attack. The concept of disaster preparedness is multidimensional and includes various elements such as disaster awareness, formal plans, mutual aid agreements, enduring social and institutional relationships, resource acquisition, training and education, drills and exercises, and methods for institutionalizing lessons learned⁶. Disaster Management training is useful for all individuals. Many lives can be saved if the people in the community have adequate knowledge about disaster preparedness as they are the first responders and the first ones to save the lives of others when disasters occurs. Hence the investigator determined to prepare an awareness programme regarding disaster preparedness for common natural disasters and to test its effectiveness by using scientific methods.

Muttarak R, et al., 2012 conducted a case study on role of education programme on disaster preparedness in Indian Ocean on Thailand's Andaman Coast. The result revealed that the formal education at the individual, household and community levels had a positive

relationship with taking preparedness measures. The education level of household members was positively related to disaster preparedness⁸.

Kalkura M. P. 2011 conducted aquasi-experimental study to assess the effectiveness of awareness program on disaster preparedness among residents of selected apartment buildings in Bengaluru, India. Majority of the respondents had no experience of any disasters in their life and obtained information on disasters through different mass media. More than 60% did not had any training on disaster management. The mean difference in the pre-test and post-test scores in the experimental group was 18.65 percent which was statistically significant; however, difference between pre-test and post-test in control group was 1.7 percent which was statistically insignificant. Hence the awareness program on disaster preparedness was effective in imparting knowledge⁹.

Materials and Methods

In this study a quantitative approach with quasi experimental Non Equivalent control group pre-test post-test design was used. Data was collected among the adults residing in Satangal Village and Sarkhet Village, Raipur, Dehradun. The sample size for the present study is 80 adults; 40 in experimental group and 40 in control group, using the purposive sampling technique. The study includes adults both females and males aged between 18 years to 60 years of age, who were available at the time of data collection, willing to participate in the study and understood Hindi language. The study excluded the participants who were sick/ ill during the data collection time and those who were not willing to participate. Formal permission was obtained from the Village (Gram) Pradhan of Satangal Village and Sarkhet Village, Raipur, Dehradun. Written consents were obtained from those who were willing to participate in the study. Using Structured Knowledge Questionnaire, a pre-test was administered in both control group and experimental group. Later awareness programme on disaster preparedness was conducted. On the day seven post-test was conducted using Structured Knowledge Questionnaire for all subjects. Analysis was done with the help of Microsoft Excel & Statistical Package of Social Sciences (SPSS) version 16 programme. Descriptive and

Inferential statistics were used to analyze the obtained data. Descriptive Statistics: Frequency and percentage distribution were used to analyze the demographic data. Mean standard deviation and mean score percentage was computed to describe the Knowledge regarding disaster preparedness. Inferential Statistics: Paired t-test was done to know the significant difference between mean pre-test and post-test knowledge scores and to test the effectiveness of awareness programme regarding disaster preparedness in both control group and experimental group. Chi-square with Yates correction test was used to find out the association between Knowledge scores and the socio- demographic variables.

Development and description of the tool: Structured knowledge questionnaire was prepared for data collection .Structured knowledge questionnaire was divided into two sections:

Part 1 : It included 7 socio-demographic variables; age, gender, educational level, occupation, family income/month, previous exposure of disaster, previous knowledge about disaster.

Part 2 : This section dealt with Structured Knowledge questionnaire containing 36 items. It included three sections-Section I : Knowledge regarding disaster, Section II: Knowledge regarding disaster preparedness and Section III : Knowledge regarding first aid of the injured personnel in disaster

Results and Discussion

Table- 1: Frequency and percentage distribution of adults according to socio- demographic variables in control group and experimental group.

S. NO	SOCIO-DEMOGRAPHIC VARIABLES	CONTROL GROUP		EXPERIMENTAL GROUP	
		n	%	n	%
1	Age				
	18- 30 years	16	40	15	37.5
	31 - 40 years	8	20	9	22.5
	41- 50 years	8	20	8	20
	51- 60 years	8	20	8	20
2	Gender				
	Male	23	57.5	19	47.5
	Female	17	42.5	21	52.5

3	Educational qualification				
	Illiterate	8	20	10	25
	Primary School	6	15	5	12.5
	High school	9	22.5	11	27.5
	Intermediate	11	27.5	9	22.5
	Graduation	4	10	4	10
	Post-graduation	2	5	1	2.5
4	Occupation				
	Un-employed	23	57.5	25	62.5
	Government job	4	10	4	10
	Private job	5	12.5	5	12.5
	Business	5	12.5	4	10
	Social worker	3	7.5	2	5
5	Family income/ month				
	Up to Rs 5000	6	15	6	15
	Rs 5001- Rs 10000	23	57.5	22	55
	Rs 10001-Rs 15000	5	12.5	7	17.5
	More than Rs 15000	6	15	5	12.5
6	Previous exposure of disaster				
	Yes	34	85	33	82.5
	No	6	15	7	17.5
7	Previous knowledge about disaster				
	Yes	34	85	34	85
	No	6	15	6	15

In pre-test, maximum 26(65 %) adults had average knowledge, 12(30%) had poor knowledge and 2(5%) had good knowledge in control group and in experimental group, maximum 24(60%) adults had average knowledge, 15(37.5%) had poor knowledge and 1 (2.5%) had poor knowledge.

In post-test, maximum 25(62.5 %) adults had average knowledge, 12(30%) had poor knowledge and 3(7.5%) had good knowledge in control group, whereas in experimental group, maximum 33(82.5%) adults had average knowledge, 7(17.5%) had average knowledge and none had poor knowledge.

Table-2 : Comparison of pre-test and post-test mean knowledge score among the adults in Control group and Experimental group.

S.No	Groups	Control Group			Experimental Group		
		n	Mean	SD	N	Mean	SD
1	Pre-test	40	15.88	4.762	40	15.35	4.865
2	Post-test	40	16.02	4.948	40	30.05	3.693
		df=39 't'=1.778 T tab = 2.0227 (2 tailed)			df=39 't'=27.297* T tab = 2.0227 (2 tailed)		

Paired t-test *Significant at p<0.05 level

Table-2 revealed that statistically there was no significant ($t_{cal} 1.778 < t_{table} 2.0227$ at $p < 0.05$) difference between pre-test (15.88 ± 4.762) and post-test (16.02 ± 4.948) knowledge of adults in control group. Whereas in the experimental group, there was significant ($t_{cal} 27.297 > t_{table} 2.0227$ at $p < 0.05$) difference between pre-test (15.35 ± 4.865) and post-test (30.05 ± 3.693) knowledge score of adults. **Hence it was concluded that the awareness programme had significant impact on improving knowledge of adults regarding disaster preparedness for common natural disasters.**

In order to find the significant difference between the mean pre-test knowledge among the adults in the control group and experimental group, independent 't' test was computed. The mean pre-test knowledge of control group was 15.88 and that of experimental group was 15.35. The $t_{calculated}$ value (.488) was less than table value (1.664) which was proved statistically

not significant. Hence there was no difference in pre-test knowledge among the adults in control group and in experimental group.

In order to find the significant difference between the mean post-test knowledge among the adults in the control group and experimental group, independent 't' test was computed. The mean post-test knowledge of control group was 16.02 and that of experimental group was 30.05. The $t_{calculated}$ value (14.366) was significantly higher than table value (1.664) which indicates that **there was significant difference in post-test knowledge among the adults in control group and in experimental group.** Hence, it was concluded that awareness program on disaster preparedness for common natural disasters was effective in enhancement of knowledge among the adults of experimental group.

Table-3 : Association of pre-test knowledge scores with socio-demographic variables in control group

S.No	Socio-demographic variables	Pre-test knowledge level(control group)			f	χ^2 value Calculated	χ^2 value table	df	p	Inference
		Poor	Average	Good						
1	Age									
	18- 30 years	3	11	2	16	2.9	12.59	6	.821	NS
	31 - 40 years	1	7	0	8					
	41- 50 years	4	4	0	8					
51- 60 years	4	4	0	8						
2	Gender					1.624	5.99	2	.844	NS
	Male	7	14	2	23					
	Female	5	12	0	17					
3	Educational Qualification					13.602	18.31	10	.191	NS
	Illiterate	4	4	0	8					
	Primary School	3	3	0	6					
	High school	4	5	0	9					
	Intermediate	1	10	0	11					
	Graduation	0	2	2	4					
Post-graduation	0	2	0	2						
4	Occupation					5.227	15.51	8	.733	NS
	Un-employed	10	11	2	23					
	Government job	1	3	0	4					
	Private job	1	4	0	5					
	Business	0	5	0	5					
Social worker	0	3	0	3						
5	Family income/month					12.261	12.59	6	.056	NS
	Upto Rs 5000/-	5	1	0	6					
	Rs 5001- Rs 10000/-	6	17	0	23					
	Rs 10001-Rs 15000/-	1	4	0	5					
More than Rs15000/-	0	4	2	6						
6	Previous exposure of disaster					1.37	5.99	2	.504	NS
	Yes	12	21	1	34					
	No	0	5	1	6					
7	Previous knowledge about disaster					2.637	5.99	2	.267	NS
	Yes	8	24	2	34					
	No	4	2	0	6					

Chi-square test

significance level at p=0.05

NOTE: NS : Not significant (p> 0.05) , * : Significant (p< 0.05)

There was no significant association of pre-test knowledge of adults regarding disaster preparedness with socio-demographic variables in the control group.

Table-4 : Association of pre-test knowledge scores with socio-demographic variables in experimental group

S.No	Socio-demographic variables	Pre-test knowledge level(Experimental group)			f	χ ² value Calculated	χ ² value table	df	p	Inference
		Poor	Average	Good						
1	Age									
	18- 30 years	5	10	0	15	1.741	12.59	6	.941	NS
	31 - 40 years	2	6	1	9					
	41- 50 years	4	4	0	8					
51- 60 years	4	4	0	8						
2	Gender					8.53	5.99	2	.001	*
	Male	2	16	1	19					
	Female	13	8	0	21					
3	Educational Qualification					20.368	18.31	10	.025	*
	Illiterate	8	2	0	10					
	Primary School	2	3	0	5					
	High school	3	8	0	11					
	Intermediate	2	7	0	9					
	Graduation	0	4	0	4					
Post-graduation	0	0	1	1						
4	Occupation					14.123	15.51	8	.078	NS
	Un-employed	14	11	0	25					
	Government job	1	2	1	4					
	Private job	0	5	0	5					
	Business	0	4	0	4					
Social worker	0	2	0	2						
5	Family income/ month					3.437	12.59	6	.0752	NS
	Upto Rs 5000/-	1	5	0	6					
	Rs 5001- Rs 10000/-	10	12	0	22					
	Rs 10001-Rs 15000/-	3	4	0	7					
	More than Rs15000/-	1	3	1	5					
6	Previous exposure of disaster					1.342	5.99	2	0.511	NS
	Yes	14	19	0	33					
	No	1	5	1	7					
7	Previous knowledge about disaster					.997	5.99	2	.607	NS
	Yes	12	21	1	34					
	No	3	3	0	6					

Chi-square test

significance level at p=0.05

NOTE: NS : Not significant (p > 0.05) , * : Significant (p< 0.05)

There was significant association of pre-test knowledge of adults regarding disaster preparedness with gender and educational qualification in the experimental group.

The findings of the study were supported by a quasi-experimental study conducted to assess the effectiveness of awareness program on disaster preparedness among residents of selected apartments in Bengaluru, India. The pre-test and post-test mean knowledge in experimental group was 59.15 percent and 77.8 percent indicating the enhancement of knowledge as 18.65 percent which was statistically significant ($t = 2.715$, $p < 0.05$). The overall pre-test and post-test mean knowledge in control group was found to be 60.05 percent and 61.75 percent indicating the enhancement of knowledge of 1.7 percent which was not statistically significant ($t = 0.0002$, $p > 0.05$). The overall pre-test mean score of knowledge score between experimental and control group was found to be 59.15 percent and 60.05 percent indicating the mild difference in the mean knowledge score as 0.9 percent which proved statistically not significant ($t = 0.6357$, $p > 0.05$)¹⁰.

Conclusion and Acknowledgement

The present study concluded that in control group the pre-test and post-test mean knowledge was found to be 15.88 and 16.02 indicating the enhancement of knowledge of 0.14 which was not statistically significant ($t_{cal} 1.778 < t_{table} 2.0227$ at $p < 0.05$). There was significant ($t_{cal} 27.297 > t_{table} 2.0227$ at $p < 0.05$) difference between pre-test (15.35 ± 4.865) and post-test (30.05 ± 3.693) knowledge score of adults in the experimental group. So, it was concluded that the awareness programme had significant impact on improving knowledge of adults regarding disaster preparedness for common natural disasters.

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Ethical considerations: Formal permission was obtained from the Institutional Ethical Clearance Committee. Informed consent was obtained from the subjects after explaining about purpose of the study and

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References

1. Park K. Preventive and Social Medicine. 19th edition. Banarasidas Bhanot Publisher. Jabalpur. 2007.p:650.
2. WHO/EHA .Disasters & emergencies definitions Training Package.WHO/EHA. Available from: URL: <https://apps.who.int/disasters/repo/7656.pdf>
3. CRED.The human cost of natural disasters 2015: a global perspective (2015).[online]. Available from: URL: <https://climate-adapt.eea.europa.eu/metadata/publications/the-human-cost-of-natural-disasters-2015-a-global-perspective/11258275>
4. CRED. Annual Disaster Statistical Review 2014: The numbers and trends.[online]. Available from: URL: https://reliefweb.int/sites/reliefweb.int/files/resources/ADSR_2014.pdf
5. Disaster Management in India: National level. 2014. Available from: URL: <http://nidm.gov.in/pdf/dp/Nat.pdf>
6. Sutton J and Tierney K. Disaster Preparedness: Concepts, Guidance, and Research. Available from: URL; <http://www.fritzinstitute.org/PDFs/WhitePaper/DisasterPreparedness-Concepts.pdf>
7. Sonopant GJ, Sawane K , Jabade M. Effectiveness of Training Manual on Disaster Management in Terms of Knowledge and SelfExpressed Practices among Secondary School Teachers in Selected Schools of Pune City. Available from: URL; <https://www.ijsr.net/archive/v4i9/SUB158588.pdf>
8. Muttarak R. & Pothisiri W. The Role of Education on Disaster Preparedness: Case Study of 2012 Indian Ocean Earthquakes and Tsunami Warnings on Thailand's Andaman Coast. Ecology and Society. Available from: URL; <http://www.ecologyandsociety.org/vol18/iss4/art51/>
9. Kalkura M. P. A study to assess the effectiveness of awareness program on disaster preparedness among residents of selected apartment buildings in Bengaluru, South India.Disaster Risk Vulnerability Conference. 2011.p:144-145. Available from: URL; <https://www.docdroid.net/97ap/disaster-risk-vulnerability-drvc2011-pdf>