

# A Quasi-experimental Research Endeavor to Evaluate the Impact of a Structured Instructional Program on Adults' Comprehension of Disaster Awareness and Management in Chosen Villages Situated in Moga, Punjab

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## Abstract

*Quasi-experimental research was conducted to evaluate the efficiency of a structured instructional program on adults' comprehension of disasters and their management. The study involved a sample of 60 adults, divided equally into an experimental group of 30 and a control group of 30. The knowledge score of adults in the experimental group regarding disaster and its management among adults was average (54%) and below-average (46%) before imparting the structured teaching program and the knowledge score of adults was good (70%) and average (30%) after imparting structured teaching program. The experimental group exhibited a noteworthy increase in mean post-test knowledge score (21.7), Surpassing the mean pre-test knowledge score of the experimental group (15.6), the increase was notably significant; however, there was no significant alteration in the mean pre-test (14.6) and post-test (14.9) knowledge scores within the control group. The variance between the average pre-test and post-test knowledge scores of the experimental group exhibited statistical significance with a p-value below 0.001. Research hypothesis  $H_1$  was accepted at  $p < 0.001$  level of significance and null hypothesis  $H_0$  was rejected at  $p < 0.05$  level of significance.*

**Keywords:** Experimental research, hypothesis, knowledge score, factors, socio-political issues.

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## BACKGROUND OF THE STUDY

A disaster refers to an abrupt and catastrophic incident that severely disturbs the operations of a community or society, leading to human, material, and economic or environmental damages surpassing the community's or society's capacity to manage using their existing resources. While frequently arising from natural factors, disasters can also arise from human actions [1–3]. Several factors can heighten or lessen the effects of a disaster on a population segment poverty, increased population density, rapid urbanization, environmental degradation, lack of awareness, war and civil conflict, and socio-political issues [4, 5].

The Indian subcontinent is notably susceptible to disasters, with Punjab experiencing floods of varying degrees over the past seven years due to

shifts in climate [6–9]. Disturbingly, different rivers have led to flooding in diverse regions of the province, encompassing riverside, urban, and sudden floods during this time frame. Road traffic accidents are internationally acknowledged as a significant public health issue, being a prominent contributor to fatalities, disabilities, and hospitalizations, resulting in substantial socio-economic burdens. In India, road injuries rank among the four primary factors leading to death and adverse health outcomes in individuals [10].

### STATEMENT OF THE PROBLEM

Quasi-experimental research was conducted to evaluate the impact of a structured teaching program on adults' understanding of disasters and their management, within specific villages in Moga, Punjab.

### PURPOSE OF THE STUDY

The purpose of the present study is to assess and improve the knowledge of adults regarding disaster and its management.

### OBJECTIVES

1. Evaluate adults' initial comprehension of disaster and its management through a pre-test assessment.
2. Evaluate adults' knowledge about disaster and its management through a post-test assessment.
3. Analyze and contrast adults' knowledge about disaster and its management before and after the intervention.
4. To find out the relationship between knowledge and selected demographic variables such as age of adults, gender, education of adults, occupation of adults, marital status of adults, family monthly income, exposure to disaster, and source of information.

### HYPOTHESIS

H<sub>1</sub>—The average post-test knowledge score of adults in the experimental group will be significantly greater than the average pre-test knowledge score.

### RATIONALE

**Jothi Arun (2015)**<sup>8</sup> The structured questionnaire indicates that the average post-test knowledge score of adults following the structured teaching program on disaster and its management will show a statistically significant increase compared to the average pre-test knowledge score, with a significance level of  $p < 0.05$ .

### DELIMITATIONS

The study will be limited to adults:

1. Who will be willing to participate in the study?
2. Who will be able to understand Punjabi, English, or Hindi?
3. Who will be present during data collection?

### METHODOLOGY

#### Research Design

Quasi-experimental non-randomized control group research design will be adopted in this study.

Experimental group O<sub>1</sub> X O<sub>2</sub>

Control group O<sub>1</sub> O<sub>2</sub>

#### Research Setting

The research will take place within specific villages located in Moga, Punjab.

#### Target Population

The target population is composed of the adults of selected villages of Moga, Punjab.

### **Sample Size and Sampling Technique**

The subjects will be selected by purposive sampling technique and the sample size will be 60. (30 for the experimental group and 30 for the control group).

### **Demographic Variables**

In this study, selected demographic variables will be the age of adults, gender, education of adults, occupation of adults, marital status of adults, family monthly income, exposure to disaster, and source of information.

### **Independent Variable**

The variable that stands alone is the structured teaching program focused on educating adults about disaster and its management.

### **Dependent Variable**

The variable influenced by other factors is the level of understanding among adults concerning the disaster and its management.

### **Inclusion Criteria**

Adults:

1. Who will be willing to participate in the study?
2. Who will be able to understand Punjabi or English?
3. Whose age will be 18 to 45 years of age?

### **Exclusion Criteria**

Adults:

1. who will not be willing to participate?
2. who will not be present at the time of data collection?
3. whose age will be less than 18 or above 45 years.

### **Selection and Development of Tool**

A semi-structured questionnaire will be developed to assess the knowledge regarding the management of disasters among adults via an extensive literature search by seeking expert opinions.

### **Description of Tool**

The tool will consist of the following parts:

Part I– Demographic variables

Part II– Semi-structured questionnaire on disaster and its management.

Part III- Structured teaching program on disaster and its management

### **Validity of Tool**

The content of the validity will be determined by the expert's opinions and suggestions.

### **Try out of Tool**

The development of the tool will be tried out for its feasibility of administration and language clarity for the study sample by taking 10% of the sample.

### **Pilot Study**

The pilot study is a small-scale version or trial-up, done in preparation for a major study. It will be conducted on 10% of the sample.

### **Reliability of Tool**

Reliability of the tool will be done by split half method, Karl Pearson's, correlation coefficient formula, and Spearman Brown proficiency formula.

### Section I: Sample Characteristics

Tables 1, 2, and 3 illustrate that within the experimental group, the pre-test revealed that the majority of adults, totaling 16 (54%), possessed average knowledge of disaster and its management, while the minority, comprising 14 (46%) adults, exhibited below-average knowledge.

### Section II Frequency and Percentage Distribution

Table 1 & Table 2 depicts that in the experimental group, the maximum number of 16 (54%) adults had average knowledge regarding disaster and its management, and the minimum number of 14 (46%) adults had below-average knowledge regarding disaster and its management in the pre-test. In the post-test, the maximum number of 21 (70%) adults had good knowledge, and the minimum 9 (30%) adults had average knowledge regarding disaster and its management whereas in the control group, the maximum number of 19 (64%) adults had below-average knowledge regarding disaster and its management and the minimum number 11 (36%) adults had average knowledge regarding disaster and its management in the pre-test, but in post-test the maximum number 21 (70%) adults had below-average knowledge regarding disaster and its management and the minimum number 9 (30%) adults had average knowledge regarding disaster and its management.

**Table 1.** Percentage distribution of the sample characteristics (N=60).

S.N.	Characteristics	Experimental Group		Control Group		df	$\chi^2$
		n	%	n	%		
<b>1</b>	<b>Age of adults (in years)</b>						
a.	18-24 years	9	30	9	30	3	0.000 <sup>NS</sup>
b.	25-31 years	8	27	8	27		
c.	32-38 years	8	27	8	27		
d.	39-45 years	5	16	5	16		
<b>2.</b>	<b>Gender</b>						
a.	Male	10	34	10	34	1	0.000 <sup>NS</sup>
b.	Female	20	66	20	66		
<b>3.</b>	<b>Education of adults</b>						
a.	Illiterate	-	-	-	-	-	
b.	Primary	12	40	16	54	2	2.54 <sup>NS</sup>
c.	Secondary	9	30	10	33		
d.	Higher Secondary	9	30	4	13		
e.	Graduate and above	-	-	-	-		
<b>4.</b>	<b>Occupation of adults</b>						
a.	Laborer	-	-	-	-		
b.	Homemaker	14	46	15	50	2	0.101 <sup>NS</sup>
c.	Private job	8	27	8	26		
d.	Government job	-	-	-	-		
e.	Agriculture	8	27	7	24		
<b>5.</b>	<b>Marital status of adults</b>						
a.	Married	14	46	14	46	2	0.000 <sup>NS</sup>
b.	Unmarried	10	34	10	34		
c.	Widow	6	20	6	20		
d.	Widower	-	-	-	-		
e.	Separated	-	-	-	-		
<b>6.</b>	<b>Family monthly Income (in Rupees)</b>						
a.	≤5000	10	34	16	54	2	2.458 <sup>NS</sup>
b.	5001–10,000	11	36	8	26		

		Experimental Group		Control Group			
c.	10,001–15,000	9	30	6	20		
d.	≥15001	-	-	-	-		
<b>7.</b>	<b>Source of information</b>						
a.	Family members	6	20	11	37	3	3.499 <sup>NS</sup>
b.	Neighbors	6	20	8	26		
c.	Health professional	10	34	6	20		
d.	Mass media	8	26	5	17		
<b>8.</b>	<b>Exposure to disaster</b>						
a.	Yes	8	26	4	14	1	1.667 <sup>NS</sup>
b.	No	22	74	26	86		

NS = non-Significant

**Table 2.** Frequency and percentage distribution of pre and post-test knowledge score regarding disaster and its management among adults in the experimental group and control group (N= 60).

Knowledge score								
Level of knowledge	Experimental group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	n	%	n	%
Good 76-100%	-	-	21	70	-	-	-	-
Average 51-75%	16	54	9	30	11	36	9	30
Below-average (<15)	14	46	-	-	19	64	21	70

Maximum knowledge score = 30

Minimum knowledge score = 0

Hence, it was concluded that the maximum number of adults had good knowledge of disaster and its management in the experimental group and below-average in the control group regarding disaster and its management.

This indicates that the structured teaching program successfully enhanced adults' knowledge about disaster and its management.

### Section III: To Compare the pre-test and post-test Knowledge of Disaster Management Among Adults

Table 3 shows in the experimental group mean pre-test knowledge score was 15.6 and the post-test knowledge score was 21.7. The contrast between the average pre-test and post-test knowledge scores was strongly significant, with a level of  $p < 0.001$ .

In the control group, the mean pre-test knowledge score was 14.6, and the post-test knowledge score was 14.9. The difference between the average pre-test and post-test knowledge scores within the control group did not reach statistical significance at a p-value less than 0.05.

There was no significant difference in the pre-test knowledge scores of adults between the experimental and control groups. Likewise, the variation in post-test knowledge scores among adults in the experimental group versus the control group was not noteworthy, while the distinction in comparison to the control group was remarkably significant at a p-value of less than 0.001.

Therefore, the null hypothesis (H<sub>0</sub>), which stated that there would be no notable contrast between the average pre-test and post-test knowledge scores of the experimental group following the organized educational program on disaster and its management, as indicated by the structured questionnaire at a significance level of  $p < 0.05$ , was dismissed. On the other hand, the alternative hypothesis (H<sub>1</sub>), which

proposed that the mean post-test knowledge score of adults would be considerably greater than their mean pre-test knowledge after the structured teaching program on disaster and its management, was corroborated at a significance level of  $p < 0.001$ .

**Table 3.** Comparison of mean pre and post-test knowledge scores regarding disaster and its management among adults in experimental and control groups (N=60).

Knowledge score								
Pre-test				Post-test				
Group	n	Mean	SD	n	Mean	SD	df	't'
Experimental group	30	15.6	2.127	30	21.7	2.781	29	26.329***
Control group	30	14.6	2.781	30	14.9	1.447	29	0.881 <sub>NS</sub>
		df	't'		df	't'		
		58	1.900 <sub>NS</sub>		58	11.881***		

Maximum knowledge score = 30, NS = non-significant

Minimum knowledge score = 0, \*\*\*Significant at  $p < 0.001$  level

## RECOMMENDATIONS

The following studies can be undertaken concerning the present study.

1. A similar study needs to be undertaken with many samples for better generalization.
2. A similar study can be conducted by seeking other variables.
3. The study can be conducted on the staff- nurses to assess their knowledge regarding disaster and its management.
4. Setting can be changed by involving more hospitals and homes.
5. An exploratory study can be done on adults regarding disaster and its management.
6. A descriptive study can be done on adults regarding disaster and its management.

## CONCLUSION

The knowledge score of adults in the experimental group regarding disaster and its management among adults was average (54%) and below-average (46%) before imparting the structured teaching program and the knowledge score of adults was good (70%) and average (30%) after imparting structured teaching program. The experimental group displayed a noteworthy increase in the mean post-test knowledge score (21.7), which exhibited a notable increase from their average pre-test knowledge score of 15.6. On the other hand, notable changes were not evident in the average pre-test (14.6) and post-test (14.9) knowledge scores of the control group. In contrast, a significant difference was observed between the average pre-test and post-test knowledge scores of the experimental group, reaching a level of significance at  $p < 0.001$ .

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