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A Study on Awareness and Challenges in Natural Disaster Preparedness in Karnataka

Raj Nirmal, Lokande Sheetal and Jain Palak
Ramaiah University of Applied Sciences, Bengaluru – 560054, India
Corresponding author: Rashmi R

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ABSTRACT
Disaster management is one of the most critical topics around the world. Many countries are getting affected because of its high magnitude impact on economy and loss of life.
Disaster management is referred as organizing and managing resources that can help in dealing with the natural calamities and humanitarian aspects in emergencies, including preparedness.
Even though disaster is a common term yet people are not aware how to be prepared and safe. On the other hand, even though the NGOs and government are providing facilities. As a citizen of India, it is our duty to take initiative for helping our society.
We **SNUPY-the disaster management crew**, our research started with visiting disaster-prone places like Madikeri, Somwarpet, Makkundur, Hattihole, Kolar, Siddlaghatta, Melur, and Vijaypura. We conducted seminars in schools with the help of hand and activity book and surveyed. Questionnaire survey method is used for flood, drought and landslides.
The questionnaires consist of 16 variables for floods and 14 variables for drought. For survey data analysis, we have used IBM SPSS. The results derived is more than satisfactory. By conducting the survey, we have come across how it affected people, challenges and how they have dealt from their losses.
Keywords: Natural disaster,Preparedness, Disaster Management, floods, drought, Landslides, Karnataka.

I. INTRODUCTION

According to the world risk Index 2018, India was ranked 75 (worldwide) with the world index 6.83. This was based on the 5 factors such as exposures, vulnerability, susceptibility, lack of coping capacities and lack of adaptive capabilities. The major is role is played by climate change and global warming. Deforestation, mining or other activities where it is disturbing the natural cycle of the earth is leading to the natural disaster.

Global warming is considered as one of the aspects of climate change and it is referred to as a raise in the temperature due to the emission of the greenhouse effects. On the other hand, climate change can be referred to when there is an increase in the measure of the climate for a long interval of time. There is an increasing change in the measures that include the precipitation, temperature and patterns in wind.

Natural Disaster is the astringent reality which affects everything and sometimes nothing is spared. Many suffer, get affected, die, become inefficient, and lose their lives and their loved ones lives too due to the disasters. Disasters have become a catastrophe over natural disaster due to its cascading impacts. Loss of lives and economic losses are on the leading hand than the population growth. It is and has become a more difficult and expensive task for the developing countries.

The main aim of the study is to create awareness about the situations occurring due to any form of disasters and to develop preparedness in younger generation to face disaster situations.

The following study is divided into Background, Literature Reviews, survey and Analysis, findings and conclusions.The main purpose of this study is to make an atmosphere where people and children are aware of the disaster and they can be prepared for the future. Our team has conducted a survey in Madikeri and surrounded areas like Madappura, Hattihole, Makkundur, KandanaKolli and Somwarpet where floods and landslides were occurred. We have also conducted survey in Vijaypur, Siddlagatta, Hoskote, Devanahalli Village and Melur where drought occurred. We have conducted a seminar in some part of the government schools where we have spoken about the disaster and how they can prepare themselves and the people around them.

Our selected area study is Karnataka. We have done an overall study on the natural disasters in Karnataka, we have specifically concentrated on three of the natural disasters and those are Flood, Landslide and Drought.Chosen survey and study

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areas for Flood and Landside is Coorg district and for Drought is Chikkaballapur and Kolar district. We visited 12 disaster prone places and 3 schools in disaster hit areas in Karnataka.

Figure No. 1 Disaster prone places visited and surveyed in Coorg District

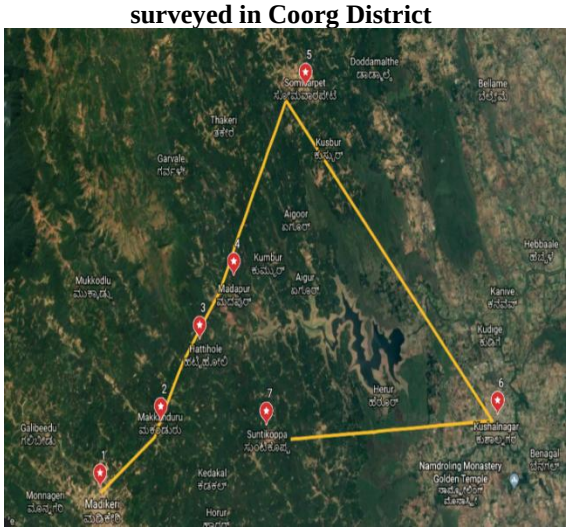
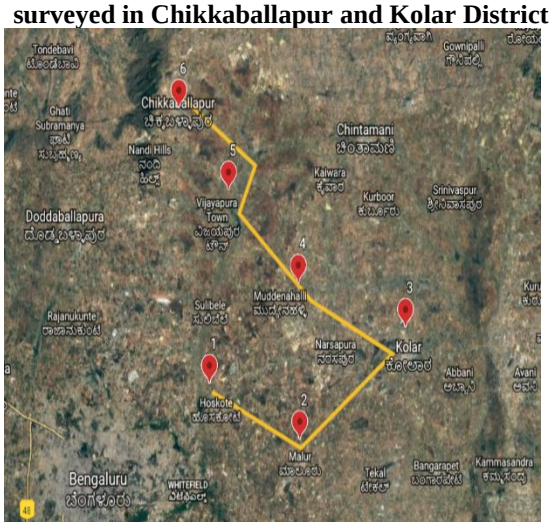


Figure No. 2 Disaster prone places visited and surveyed in Chikkaballapur and Kolar District



Coorg at a glance: One among the smallest district in Karnataka is Kodagu which is also known as Coorg.It is the most beautiful hill station in south-west Karnataka region. This place is also called the coffee cup of India. The main source of income for this place is agriculture and tourism.

The town capital of Kodagu district is Medikeri with an estimated population of 30000.This district consists of 3 taluks Madikeri, Virajpet and Somwarpet.

Kolar at a glance:

Kolar happens to be the easternmost district of Karnataka.Kolar is known for golf mines as well as milk. This area is surrounded by by the districts of Bangalore Rural and Tumkur on the west; on the north, by Chikballapur District; on the east by Chittoor District of Andhra Pradesh; and on the south by Krishnagiri and Vellore of Tamil Nadu.

Table No. 1 Average Rainfall Statistics Coorg District

Average Rainfall Statistics Kodagu District:

Taluk	Normal Rainfall	2014	2015	2016	2017	2018	2019
Madikeri	3286.20	3933.05	3397.42	2780.04	3140.90	3790	2711
Virajpet	2661.20	2310.82	1861.74	1206.80	1790.83	3010	1260
Somwarpet	2206.10	2082.90	1606.60	1308.40	1732.19	2077	1127

Graph No. 1 Rainfall pattern in Kodagu district

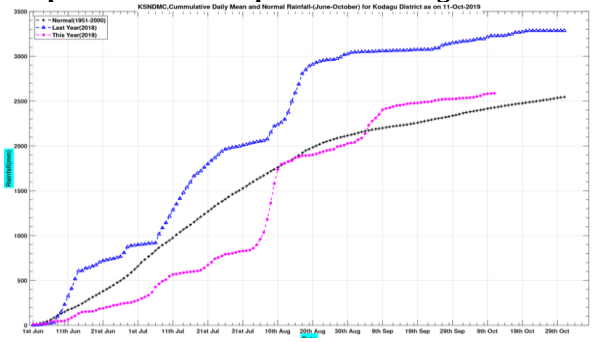


Table No. 8 Average Rainfall Statistics Kolar and Chikkabalapur District

Average Rainfall Statistics of Kolar and Chikkabalapur District:

Taluk	Normal Rainfall (mm)	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bagepalli	697	716	786	677	499	598	428	1010	439	798
Chikabalapur	789	827	968	743	663	650	558	1058	694	819
Chintamani	751	798	900	668	721	642	458	1133	524	884
Gauribidanur	679	772	967	684	566	666	572	1070	655	884
Gudibanda	714	849	948	736	454	687	481	939	555	758
Sidlaghatta	767	862	873	757	668	65	499	1074	585	837
Total	731	694	899	669	566	570	415	1010	495	833

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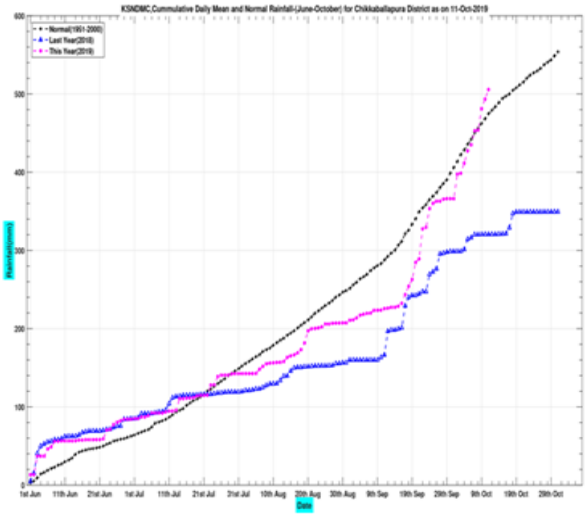
Graph No. 2 Rainfall pattern in Chikkaballapura district



II. LITERATURE REVIEWS:

1. Sarthak Chakraborty and Sabuj Kumar Chaudhuri (2018), this study aims to understand the role of and contributions made by the academic Libraries of India. As bridging organisations, they can strengthen the community for disaster preparedness so that there can be less loss. Direct interaction with the community and continuous practice of the action plans proposed can gradually help to build the disaster preparedness amongst the society.

2. Alam E (2016), The author has tried to understand risk perception and the preparedness about earthquake and tsunami in South-East Bangladesh. interview and discussions with the citizens of Bangladesh reveals about their knowledge about less occurrence of earthquake and Tsunami. Research shows that the population is not prepared due to the less occurrence of the disaster and this can be considered them to be at high risk.

3. T. Tingsanchali (2011), urban flood risk management can be successful if the structural and non-structural measurements are successful are implemented. Monitoring and evaluation of the implementation can be helpful to improve the flood risk management plans. Community participation is considered as the key to the successful flood risk management Plan.

4. Shankar Neeraj, S Balachandra and B Vivek Reddy (2017), Flood disaster management in India- a case study on Chennai flood. Urban area land cost is very high. So, people are bond to stay at places which are prone to natural disasters. Floods are extremely destructive and can occur due to heavy rainfall/ landslides etc. Poor drainage facilities cause floods too when there is heavy rainfall. Bangladesh and India are the most affected countries in the world. There were some structural changes indicated like raised platform etc. says the authors.

5. Sisira Jayasuriya and Peter Mc Cawley (2008),This article is based on 2004 tsunami occurred in Asia continent in countries like Indonesia, Sri Lanka and Thailand. The government and committees organised the relief funds and health services with temporary shelters at that time there was huge fundings and promises were made initially that which was more important for the relief and reconstruction but later on they found that there was a wide range of inefficiencies in the distribution. They found that many NGOs lack experience and local knowledge. By this the GDP of the country also fall down and death rate was about 4% of the population. Later on, the international committee prepared to bear the cost of tsunami reconstruction.

III. MATERIAL AND METHODS

Objectives of the research:

- An overall study about existing flood hit areas, landslide prone areas and drought prone areas.
- Creating and evaluating the awareness of natural disasters.
- To educate and promote the natural disaster safety for the vulnerable groups by developing awareness and preparedness generation materials like Handbook and website.
- To analyse and identify the challenges faced by the vulnerability communities and in natural disaster preparedness.

The deliverables of our research are Preparedness Hand and Activity book and website is useful to be aware, prepared and use the emergency contacts and to locate the people.

Our Crew's Website link –
https://snupydisastercrew.wixsite.com/snupy-the-crew

Primary Data – The primary data collection is done by questionnaire survey method. Two questionnaires were prepared. The respondents were the residers from Coorg District and Chikkabalapur and Kolar district. We have conducted seminars for students and interacted with the teachers and residers. We also asked residers their experiences and how they have overcome.
We met government school teachers in disaster prone areas. We have interviewed retired DYSP, an Army officer, school staffs, villagers and localities.

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We also contacted people and officials we know and collected a lot of information and suggestions which was useful in our survey.

Secondary data:

The secondary data consist of all the articles, published papers and thesis on the topic. The government rules and regulations from the government websites is also referred. Disaster management plan and government reports are also referred. Climate changes, Average rainfall and weather forecast is also considered. All the sources are referred in the reference section.

Variables considered for our survey are as follows: Two questionnaires were prepared, one for flood and another for Drought. And is mentioned below;

Flood Survey:

Residence in flood prone area, Dealing with flood event, River or Flash flooding in the residence, Disaster hazard and preparedness via different mediums, Importance of elevated heater and utilities, NGO's initiatives and Involvement of public sector organizations, Communication facilities and Government cleanup initiative programs and relief camp facilities

Drought Survey:

Global warming and Rise in temperature, Ground water levels and Adequate water for consumption in upcoming years, Food scarcity and Malnutrition, Farmers' suicide and Population migration, Health and household income

IV. RESULTS AND DISCUSSION

{During the phase of disaster}

Distance covered - 700 kms

a. Cutting down of tress has been happening.
b. Topography was disaster prone.
c. No focus was given for drainage systems.
d. People lacked Knowledge.
e. Regular commuting roads were closed for repairs and alternative roads costed people lot of money to commute.
f. Road constructions are happening in a brisk speed which is a boon for people staying there.
g. Migration is one of the factors which has been happening in few parts of the above-mentioned places.
h. Government schools around these places are still working in spite of the students migrating to other towns.

{Post disaster phase}

a. Road constructions and other repair works almost complete.
b. Towns have completely recovered and functioning.
c. Afforestation has been done at places affected by landslides and floods.
d. New drainage systems have been constructed at remote areas as well as places near waterfalls.

Drought prone areas status: Our next assignment was to travel towards Chikkabalapur Kolar district to places like Devanahalli Village, Vijaypura, Melur, Siddlaghatta, Hoskote and Kolar.

Distance covered - 300 kms

Here through conducting survey we were able to meet farmers, teachers and government officials and got some ground level information's of the problems which has been faced by the residers around these places and also about the government aids received

Some of the key observations include:

{During the phase of disaster}

a. Dry lands and fields around these places are observed.
b. Almost all the water bodies were dried and in few ponds the water level was very low.
c. The residers of that particular region said there was very little rainfall and 2019 rainfall is a bit better than 2018's rainfall.

{Post disaster phase}

a. Our Observations concluded on the houses and other settlements around these places having more water tanks, this gives us an idea about the water shortages that probably residers would face in the upcoming years.

IBM SPSS:

Assumptions: The following are the assumptions considered in the analysis of the survey data using SPSS software.

- The sample size of our survey is 300, where the **flood related survey is 165** and **the Drought related survey is 135. n = 300.**
- The demographic factor considered is **Gender** – Male, Female, others.
- The variables considered in **Flood survey is 16 and 14 in the Drought survey**.
- Our survey questionnaire, variables are based upon **the Natural Disaster Awareness, Safety, Preparedness, Communication Facilities, NGO'S initiatives, Government Funding, Relief Camps, Population, Health, Crops, Insurance and other necessities.**

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- The response is in **Likert scale measure**, and it is a **5-scale** measure.
- when a respondent agrees to the statement completely, the answer would be 1 (Strongly Agree) and vice – versa for the disagreement. The Likert scale measure **1** is **the most** and **5** is **the least**.

Flood survey Analysis:

i. Reliability Test –

```
RELIABILITY
  /VARIABLES=Gender Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE ANOVA FRIEDMAN
  /SUMMARY=TOTAL.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	165	100.0
	Excluded[a]	0	.0
	Total	165	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.821	.819	17

ii. ANOVA and Friedman Test –

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
38.7636	69.304	8.32488	17

ANOVA with Friedman's Test

		Sum of Squares	df	Mean Square	Friedman's Chi-Square	Sig
Between People		668.575	164	4.077		
Within People	Between Items	833.255[a]	16	52.078	801.914	.000
	Residual	1909.922	2624	.728		
	Total	2743.176	2640	1.039		
Total		3411.752	2804	1.217		

Grand Mean = 2.2802

a. Kendall's coefficient of concordance W = .244.

iii. Descriptive Statistics

Descriptive Statistics

	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic
Do you think Elevated water heater/furnace /other utility and Elevated home is of some importance during flooding? [Scale of 1 to 5]	165	4.00	1.00	5.00	2.2364	.98706
How Satisfied are you with the NGOsâ€™ Initiatives post flooding? [Scale of 1 to 5]	165	4.00	1.00	5.00	2.4970	.96034
How satisfied are you with the communication facilities during the Flood time? [Scale of 1 to 5]	165	4.00	1.00	5.00	3.0000	1.08200
How would you rate your flooding problem on a scale of 1 â€“ 5? [Scale of 1 to 5]	165	4.00	1.00	5.00	1.7939	.92061
How important do you believe the involvement of your community is in responding to flooding, with the assistance of other public services/organisations? (Please circle appropriate level) [Scale of 1 to 5]	165	4.00	1.00	5.00	2.3333	.95211
Do you feel there is a need of Flood Insurance? [Scale of 1 to 5]	165	4.00	1.00	5.00	1.9091	.86826
How would you rate the government clean-up initiative programme post flooding on a scale of 1 to 5? [Scale of 1 to 5]	165	4.00	1.00	5.00	2.7818	1.01256
How Satisfied were you with the Relief Camp Facilities Provided by the Government during the flood event? [Scale of 1 to 5]	165	4.00	1.00	5.00	2.9212	1.10976

Descriptive Statistics

	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic
Do you think Elevated water heater/furnace /other utility and Elevated home is of some importance during flooding? [Scale of 1 to 5]	165	4.00	1.00	5.00	2.2364	.98706
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How satisfied are you with the communication facilities during the Flood time? [Scale of 1 to 5]	165	4.00	1.00	5.00	3.0000	1.08200
How would you rate your flooding problem on a scale of 1 â€“ 5? [Scale of 1 to 5]	165	4.00	1.00	5.00	1.7939	.92061
How important do you believe the involvement of your community is in responding to flooding, with the assistance of other public services/organisations? (Please circle appropriate level) [Scale of 1 to 5]	165	4.00	1.00	5.00	2.3333	.95211
Do you feel there is a need of Flood Insurance? [Scale of 1 to 5]	165	4.00	1.00	5.00	1.9091	.86826
How would you rate the government clean-up initiative programme post flooding on a scale of 1 to 5? [Scale of 1 to 5]	165	4.00	1.00	5.00	2.7818	1.01256
How Satisfied were you with the Relief Camp Facilities Provided by the Government during the flood event? [Scale of 1 to 5]	165	4.00	1.00	5.00	2.9212	1.10976

Descriptive Statistics

	Variance Statistic	Skewness Statistic	Skewness Std. Error	Kurtosis Statistic	Kurtosis Std. Error
Gender	.665	1.922	.189	4.286	.376
Do you believe that your house is in flood prone area? [Scale of 1 to 5]	.525	1.316	.189	1.879	.376
Is River Flooding, a major concern for u? [Scale of 1 to 5]	.608	.745	.189	.150	.376
Is Flash Flooding, a major concern for u? [Scale of 1 to 5]	1.650	-.506	.189	-.766	.376
How prepared are you to deal with a flood event? [Scale of 1 to 5]	1.259	-.502	.189	-.852	.376
Do you prefer Newspapers and Handbooks as a medium to receive flood hazard and disaster preparedness information? [Scale of 1 to 5]	.865	.784	.189	.495	.376
Do you prefer Radio and Local TV (News, commercials, etc.) as a medium to receive flood hazard and disaster preparedness information? [Scale of 1 to 5]	.713	.419	.189	-.570	.376
Do you prefer Email and Social Media (Facebook, Twitter, Instagram, etc.) as a medium to receive flood hazard and disaster preparedness information? [Scale of 1 to 5]	.921	.692	.189	.171	.376

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Descriptive Statistics

	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Do you think Elevated water heater/furnace /other utility and Elevated home is of some importance during flooding? [Scale of 1 to 5]	.974	.780	.189	.223	.376
How Satisfied are you with the NGOsâ€™ Initiatives post flooding? [Scale of 1 to 5]	.922	.239	.189	-.574	.376
How satisfied are you with the communication facilities during the Flood time? [Scale of 1 to 5]	1.171	-.322	.189	-.675	.376
How would you rate your flooding problem on a scale of 1 â€“ 5? [Scale of 1 to 5]	.848	1.087	.189	.603	.376
How important do you believe the involvement of your community is in responding to flooding, with the assistance of other public services/organisations? (Please circle appropriate level) [Scale of 1 to 5]	.907	.488	.189	.261	.376
Do you feel there is a need of Flood Insurance? [Scale of 1 to 5]	.754	.970	.189	.820	.376
How would you rate the government clean-up initiative programme post flooding on a scale of 1 to 5? [Scale of 1 to 5]	1.025	-.156	.189	-.332	.376
How Satisfied were you with the Relief Camp Facilities Provided by the Government during the flood event? [Scale of 1 to 5]	1.232	-.141	.189	-.730	.376

iv. Kaiser-Meyer-Olkin and Bartlett's test –

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.780
Bartlett's Test of Sphericity	Approx. Chi-Square	953.880
	df	120
	Sig.	.000

Drought survey Analysis:

i. Reliability Test –

```
RELIABILITY
  /VARIABLES=Gender Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE ANOVA FRIEDMAN
  /SUMMARY=TOTAL.
```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	135	99.3
	Excluded[a]	1	.7
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.806	.811	15

ii. ANOVA and Friedman Test –

ANOVA with Friedman's Test

		Sum of Squares	df	Mean Square	Friedman's Chi-Square	Sig
Between People		612.410	134	4.570		
Within People	Between Items	509.047[a]	14	36.360	442.521	.000
	Residual	1665.086	1876	.888		
	Total	2174.133	1890	1.150		
Total		2786.543	2024	1.377		

Grand Mean = 2.3531

a. Kendall's coefficient of concordance W = .183.

iii. Descriptive Statistics –

Descriptives

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Gender	135	4.00	1.00	5.00	1.5778	.85925
Is there problem regarding water in the area where you live? [Scale of 1 to 5]	135	4.00	1.00	5.00	1.7778	.88661
Do u agree that Global warming is affecting the rainfall of your particular area/regions? [Scale of 1 to 5]	135	4.00	1.00	5.00	1.9704	.87196
Do u agree that drought increase in average temperature? [Scale of 1 to 5]	135	4.00	1.00	5.00	2.2000	.99851
Is your area having enough water resources to meet all of its needs 5 years from now? [Scale of 1 to 5]	135	4.00	1.00	5.00	3.2667	1.40468
Drought has caused Food Scarcity â€“ what do you think? [Scale of 1 to 5]	135	4.00	1.00	5.00	2.0444	.88829

Descriptive Statistics

	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Gender	.738	1.940	.209	4.481	.414
Is there problem regarding water in the area where you live? [Scale of 1 to 5]	.786	1.366	.209	2.391	.414
Do u agree that Global warming is affecting the rainfall of your particular area/regions? [Scale of 1 to 5]	.760	.949	.209	1.189	.414
Do u agree that drought increase in average temperature? [Scale of 1 to 5]	.997	.546	.209	-.326	.414
Is your area having enough water resources to meet all of its needs 5 years from now? [Scale of 1 to 5]	1.973	-.503	.209	-1.078	.414
Drought has caused Food Scarcity â€“ what do you think? [Scale of 1 to 5]	.789	.755	.209	.345	.414

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Descriptive Statistics

	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Drought caused Malnutrition â€" what do you think? [Scale of 1 to 5]	.849	.614	.209	-.068	.414
Drought caused Population Migration â€" what do you think? [Scale of 1 to 5]	1.335	.472	.209	-.701	.414
Drought caused Farmers Suicide â€" what do you think? [Scale of 1 to 5]	1.484	.139	.209	-.988	.414
Drought affected Health â€" what do you think? [Scale of 1 to 5]	1.022	.485	.209	-.296	.414
Did crops get affected by Drought? [Scale of 1 to 5]	1.212	.795	.209	-.196	.414
Drought caused reduction in the Household Income â €" what do you think? [Scale of 1 to 5]	.988	.505	.209	-.359	.414
Drought affected schooling of children â€" what do you think? [Scale of 1 to 5]	1.335	.289	.209	-.819	.414
Drought affecting the Groundwater Levels - what do you think? [Scale of 1 to 5]	1.148	.821	.209	.207	.414
How much prepared do you think you were to deal with Drought? [Scale of 1 to 5]	1.579	-.472	.209	-.765	.414
Valid N (listwise)					

Descriptive Statistics

	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Drought caused Malnutrition â€" what do you think? [Scale of 1 to 5]	.849	.614	.209	-.068	.414
Drought caused Population Migration â€" what do you think? [Scale of 1 to 5]	1.335	.472	.209	-.701	.414
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Drought affected Health â€" what do you think? [Scale of 1 to 5]	1.022	.485	.209	-.296	.414
Did crops get affected by Drought? [Scale of 1 to 5]	1.212	.795	.209	-.196	.414
Drought caused reduction in the Household Income â €" what do you think? [Scale of 1 to 5]	.988	.505	.209	-.359	.414
Drought affected schooling of children â€" what do you think? [Scale of 1 to 5]	1.335	.289	.209	-.819	.414
Drought affecting the Groundwater Levels - what do you think? [Scale of 1 to 5]	1.148	.821	.209	.207	.414
How much prepared do you think you were to deal with Drought? [Scale of 1 to 5]	1.579	-.472	.209	-.765	.414
Valid N (listwise)					

iv. Kaiser – Meyer – Olkin and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.794
Bartlett's Test of Sphericity	Approx. Chi-Square	524.358
	df	91
	Sig.	.000

Interpretation: -The following are the Interpretations of the survey data analysis using SPSS software.

- **Descriptive Statistics:**

– According to both our Flood and Drought survey analysis and also after comparing the Standard deviation and Mean values, we came to a conclusion that Male, Female, Others – Gender on the whole **Does not affect** their point of view, as everybody want to be prepared, stay safe and save their and their family's lives and belongings.

- **Reliability Analysis:**

– The Reliability coefficient of Cronbach's alpha normally ranges **between 0 and 1.**

– In our Flood survey reliability analysis output derived, the Cronbach's alpha is 0.821, which indicates a high level of internal consistency for our scale with the specific sample.

– In our Drought survey reliability analysis output derived, the Cronbach's alpha is 0.806, which indicates a high level of internal consistency for our scale with the specific sample.

– The reliability coefficient is > 0.70 that is 0.821 for Flood survey and 0.806 for Drought survey which is an acceptable survey.

- **KMO and Bartlett's Test:** KMO (Kaiser-Meyer- Olkin) measure of sampling adequacy is 0.780 and 0.794 which shows that components analysis is useful. The value of KMO should be greater than 0.6 for it to be useful.

- **ANOVA with Friedman Test:**

– According to the ANOVA Friedman test the Significant value is 0.000, that means the variable has a significant relation.

- **Factor Analysis:**

– Factor analysis is a method of data reduction.

- **Chi – square Test:**

– Ordinal categorical variables - Gender is considered.

Limitations of the study –

- **Time constraint –** Time was the major aspect, we had many tasks to perform like surveying, seminars in schools, and interviewing the officials in the disaster-prone areas.
- **Availability of people and locate people –** as it's a hill station, greenery everywhere it was difficult to find or locate people / residers nearby.
- **Awareness –** The disaster-prone areas' residers were not aware of what was being asked by us. And many people had migrated from those areas, hence getting information from people who faced the issue and underwent the problem were hard to locate.
- **Travelling to certain places and areas was tough –** only 80 – 85% approximately disaster-prone areas were recovered and the roads and the pathways were still being laid and constructed so travelling was tough and our vehicle could not pass in those areas. We had to walk and travel in the dense forests to locate exact flood, landslide and drought prone areas.

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V. FINDINGSANDCONCLUSION

Findings:

Flood:

As per the survey, we found out that most of the affected place are on the river banks and they are affected by the river floods (stop gates). When the Natural Disasters (Flood and Landslide) happened, all the people who had resided at the disaster-prone place were shifted and asked to stay in the Ganjhi Kendra (temporary shelters). These GanjhiKendras were nothing but the government school premises. Until the disaster-prone places and areas were recovered, the school were unable to run the regular schooling, this affected the studies of the children.

Landslide:

The survey related to Landslides is done in a particular area [Madikeri] is majorly affected by landslides. We have found out that after the occurrence of the natural disaster majority of the population have migrated, Lot of people shifted to different places, the schools in natural disaster-prone places student population have decreased compared to earlier. Pre-disaster phase strength of the school was of 57 students but after the disaster occurred it has reduced to 32, most of them have lost their property, crops, etc. because the place situated in hill station areas. We also found that there was no proper communication and transportation facility at the time of landslides. They have been provided with basic facilities like food shelter etc. And also, they were provided with some funds from governments and NGOs. We found that there was nearly Rs 3000crore of loss at the time of disaster and finally the government has received 25.16 crores of public contribution and 102 crores of collection from the government employees of their one-day salary.

Drought:

Drought can be found in north Karnataka regions and also in some regions like Kolar and surroundings. We found that these places are mainly affected by drought because of deforestation and global warming. We found that droughts create food scarcity and malnutrition, as most of the lands are dried and can't be used for any purpose It is also the main reason for the increase in temperature in a particular area and the main cause is that it is also affecting the Groundwater level. It is affecting the life of the people because these areas are mainly depending on agriculture but there is no proper water supply due to these farmers are committing suicide. We found that most of the ponds and lakes were dry but the drought has not affected any population migration. There were no drought relief funds from the government except 4702 crores of 2016-2017.

Conclusions:

- People lack knowledge about how to deal with a disaster.
- Children should be taught about coping with a disaster during the primary education itself.
- Disaster preparedness should be added to the curriculum.
- Disaster prone areas need special drainage systems.
- Disaster preparedness should be done as an activity in rural areas.

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