Analysis of Public Awareness about District Disaster Management Plan: A Case of Dehradun City.

Análisis de la conciencia pública sobre el plan de gestión de desastres del distrito: un caso de la ciudad de Dehradun.

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ABSTRACT

Since 2000, at least 5,731 people have perished and over 2,000 have been wounded in natural disasters in Uttarakhand, the majority of which were caused by flash floods and landslides, as per data provided by the state's disaster management agency. Natural disasters are common in locations near the Himalayan Mountains. The goal of the research is to examine public knowledge, understanding of natural disasters that have happened or are anticipated to happen in the city, as well as the city's disaster preparedness and management, to find gaps in the District's Disaster Management Plan (DDMP) for its inhabitants. A pilot survey with 50 respondents was undertaken to determine the level of public awareness. The study concludes about awareness amongst the citizens for the DDMP and recommends ways of public engagement and incorporate their views into future management activities.

Keywords: Disaster management, public awareness, District Disaster management Plan, Natural Disaster

RESUMEN

Desde 2000, al menos 5.731 personas han muerto y más de 2.000 han resultado heridas en desastres naturales en Uttarakhand, la mayoría de los cuales fueron causados por inundaciones repentinas y deslizamientos de tierra, según datos proporcionados por la agencia estatal de gestión de desastres. Los desastres naturales son comunes en lugares cercanos a las montañas del Himalaya. El objetivo de la investigación es examinar el conocimiento público, la comprensión de los desastres naturales que han ocurrido o se prevé que ocurran en la ciudad, así como la preparación y el manejo de desastres de la ciudad, para encontrar brechas en el Plan de Manejo de Desastres del Distrito (DDMP) para sus habitantes. Se llevó a cabo una encuesta piloto con 50 encuestados para determinar el nivel de conciencia pública. El estudio concluye acerca de la conciencia entre los ciudadanos sobre el DDMP y recomienda formas de participación pública e incorporar sus puntos de vista en futuras actividades de gestión.

Palabras clave: Gestión de desastres, conciencia pública, Plan Distrital de Gestión de Desastres, Desastre Natural

INTRODUCTION

As per United Nations Office for Disaster Risk Reduction(UNDRR), "A disaster is a serious disruption of a society's workings at any scale caused by hazardous incidents interacting with conditions of the environment, exposure, and capacity, resulting in one or more of the following losses and impacts: Ecology, resource, financial, and environmental" (UN Office 2000). According to the Internal Federation of Red Cross and Red Crescent Societies (IFRC), "A disaster is a major crisis that occurs over a short or long period of time and results in widespread ecology, resource, financial, or environmental damage that surpasses the afflicted community's or society's ability to manage with its own resources" (IFRC 1919). Based on the two definitions, we may assume that Disaster Management and Mitigation are concerned with minimising the consequences of hazardous occurrences on society, which can be accomplished by study, awareness, and effective resource planning during and after such disasters. The terms disaster management and emergency management are often used interchangeably. It requires the creation of strategies, institutions, and agreements that bring together the normal efforts of governments, non-profits, and commercial entities to respond to emergency needs in a thorough and coordinated manner. Such actions must be carried out as promptly as feasible when a disaster hits (Moe 2006, Pathranarakul 2006).

Natural disasters like earthquakes, landslides and flooding are common in India's northern and north-eastern areas, particularly those around the Himalayan ranges. The study's case location is Dehradun, the capital of Uttarakhand, that falls between two Himalayan ranges: the Shivaliks and the Middle Himalayas. The primary boundary thrust is the Middle Himalayas, which has rendered the belt more vulnerable to earthquakes and landslides. As a watershed area, heavy rainfall during the monsoon season enhances the risk of flash floods in the city, which is traversed by multiple rivers (most of them seasonal). Forest fires have become a new type of calamity because of climate change and rising temperatures. To combat natural and man-made disasters, Uttarakhand government has formed a State Disaster Management Authority for the state and a District Disaster Management Centre for the city. The Uttarakhand Disaster Management Authority was formed in the year 2005. However, the first District Disaster Management Plan for published only in the year 2017-18.

The aim of this study is to examine public awareness and understanding of natural disasters that have occurred or are likely to occur in the city. Also, the city's disaster preparedness and management, to identify gaps in the District's Disaster management plan (DDMP) with regard to its residents and formulating DDMP recommendations based on public feedback. There are six sections to the paper. The first section is an introduction that includes a description of disaster and disaster management, as well as a background on the research area and the components considered. The second section contains a literature review with findings from many research studies on public engagement in disaster management plans and effective public participation. An overview of District and State Disaster Management Plans is also included in the literature study. The approach, as well as the actions, followed to finish this research, are presented in Section 3. Section 4 discusses data gathering methods, types of data obtained, and data analysis. Section 5 addresses the results of the data analysis and the recommendations based on the findings, while Section 6 provides the study's conclusion.

MATERIAL AND METHODS

Description of the Study Area: This research was conducted in Dehradun, the capital city of Uttarakhand. This state is regarded as one of the most disaster-prone states, with natural hazards such as earthquakes, flash floods, and landslides posing a serious threat. Flash floods and landslides triggered by extreme rainfall, cloudburst, or glacier burst have killed the most deaths in this state over the last two decades, according to the statistics.

Data collection strategy: To analyse the situation in Dehradun, the study's strategy begins with identifying the issue statement and gaps in various studies. A questionnaire was created with a sample size of 50 people for the primary survey, with the goal of identifying factors that can be incorporated into the district plan by analysing public knowledge about disasters, their response in case of a disaster, and encouraging the public to gather knowledge and awareness about them. The research looks at natural disasters such as earthquakes, landslides, flash floods, and wildfires.
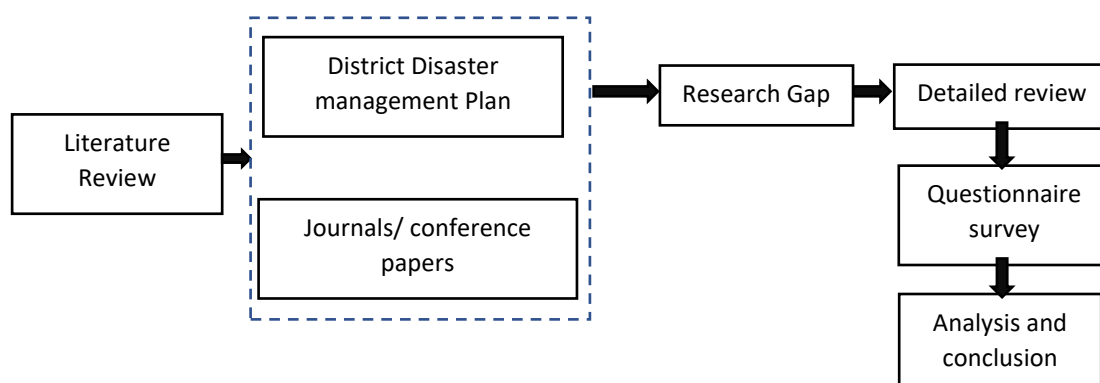
Literature Review:

1. Uttarakhand State Disaster Management Plan (SDMP) and Dehradun District Disaster Management Plan (DDMP)

Multiple Disaster Management Plans for disaster preparedness and management are being disseminated in case of a natural disaster at both the state and district levels. The general strategy, recommendations for district authorities, and disaster mitigation strategies are all included in these state-level plans. The policy also includes a section on public awareness. The specifics of numerous government entities that are summoned in case of a catastrophe, their preparation, infrastructure accessible to them, and contact information for the relevant persons in that authority are usually contained in the district disaster management plan. The district plans, on the other hand, do not include any information on the awareness campaign.

1.1 Dehradun District Management Plan

The DDMP begins with an overview of the Dehradun district, including its geography, population, climate, and the areas of individual blocks and the entire district. Dehradun's Mussoorie range is located on the MBT (Main Boundary Thrust), which has been the site of several earthquakes. The city is prone to earthquakes due to the presence of the Main Boundary Thrust in the north and the Himalayan Frontal Thrust in the south. The district is in Zone 4 on the country's seismic zoning map. During the monsoons, the area is also prone to flash floods and urban flooding. The plan includes a list of susceptible structures that might be harmed in the event of an

earthquake or flash flood. The absence of any type of public participation in the District Plan is a key flaw in the plan. There are no points about public awareness, knowledge, or engagement at any level in it.

1.2 State Disaster Management Action Plan for Uttarakhand State

It begins with an overview of the state, including its demographic and socioeconomic character, geographical and administrative divisions, geology, climate, infrastructure, land use patterns, transportation and communication, electricity, and electrical installations. The subject of this research study is highlighted in Chapter 4, which focuses on preparatory measures. It includes elements such as community preparedness and planning for a community-based disaster management programme, as well as public awareness campaigns for the community, schools, State and District authorities, and other stakeholders. It also discusses the Disaster Capacity Building Program, which includes the responsibilities of NGOs, the media (print and electronic), hospital medical preparation, and state-level institutional mechanisms. The primary goal of the community-based disaster management plan is to guarantee that all aspects of community preparedness are properly planned and integrated.

2. Public Participation

In risk and capacity assessments, a major obstacle to disaster risk reduction is a lack of communication and coordination across several administrative levels–regional, national, provincial, and/or local. Because catastrophes are the outcome of vulnerability, resilience techniques are shaped, with a focus on community agency and capacity building (Burnside-Lawry 2015, Carvalho 2015). If individuals are to actively participate in risk reduction, concerns of power relations, inclusion, and exclusion must be addressed if both speaking and listening are to be promoted (Burnside-Lawry 2015, Carvalho 2015). Mitigating disaster risk needs the participation and collaboration of the whole community. It also required empowerment, as well as inclusive, accessible, and non-discriminatory participation, with an emphasis on those who are disproportionately affected by disasters, especially the poorest (Valibeigi et.al. 2019).

3. Knowledge and Awareness:

Knowledge is formed through gathering and arranging data. Facts, figures, and evidence are crucial media for eliciting and building knowledge (Weichselgartner 2015). The International Strategy for Disaster Reduction (ISDR) defines public awareness as the process of informing the public, raising levels of knowledge about risks, and demonstrating how individuals may act to decrease their exposure to hazards. Public awareness campaigns encourage people to adjust their habits, resulting in a risk-averse culture (Weichselgartner 2015), (UNISDR 2016).

The primary gap discovered after studying the key research articles, the Uttarakhand SDMP, DDMP, National Policy on Disaster, and the NDMP Plan is the execution of the elements for public engagement and receiving feedback on them to further enhance its implementation. The implementation of Public Participation Points as outlined in the disaster management plan has reached the intended audience, which is inferred from responses to a series of questions about natural disasters and disaster management authority by a segment of the population of various age groups and their time in the city.

RESULTS AND DISCUSSION

The data for the article is collected from both primary and secondary data sources. A questionnaire was created with questions based on the respondent's demographics, knowledge, response, and feedback, and distributed to various classes of the population, including local businessmen, students, and service class members.

1. Demographic Characteristics of the Respondents

According to the study's findings, 52 per cent of the respondents had lived in the city for more than 30 years. Almost 90% of those surveyed had completed their degrees, with 40% having completed their post-graduation education as well. The results of the analysis are statistically significant with an age of 40 years (SD = ±18).

Table 1: Demographics Characteristics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	50	1.00	2.00	1.3400	.47852
Age in years	50	16	77	40.48	18.324
Education qualification	50	1.00	3.00	2.3000	.64681
Living in the city since(years)	50	3	77	28.46	17.929

The data was sorted for analysis based on the selected variables and factors. Secondary data was gathered from the Disaster Management Authority portal for the current Action Plans in use. The questions focused mainly on two factors: knowledge and Awareness.

2. Knowledge:

During the survey, it is found that 84 per cent of respondents are familiar with disaster and disaster management. While 12% of the respondents are unclear. To test their knowledge of different disasters, they were asked individual questions. Natural disasters occurring more frequently in Dehradun include earthquakes, landslides, flash floods, and, more recently, wildfires caused by climate change, hence a questionnaire was created based on these four topics. Based on figures 1, 2, 3 and, 4 it can be concluded that most respondents are aware of earthquakes but unaware of the other three disasters. One of the reasons for this is the widespread awareness that has been established through different channels on earthquakes. The remaining calamities are seasonal, happening only during a specified time of year, and hence do not receive adequate attention. It does not mean that people should be unaware of them. They wreck chaos in a short amount of time and are readily avoided and controllable if sufficient knowledge and awareness about them is there and is passed down from school to graduation.

Figures: Public Awareness about Various Disaster Management
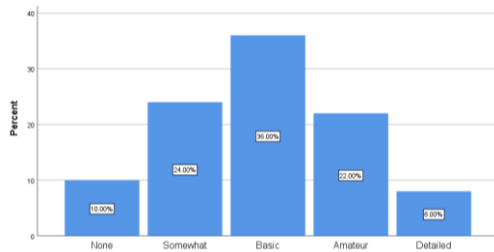
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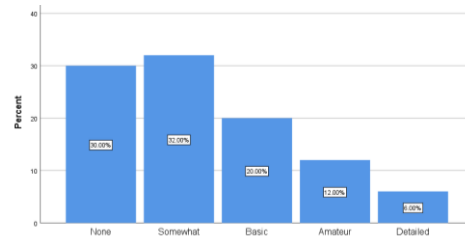

Figure-1 Earthquake
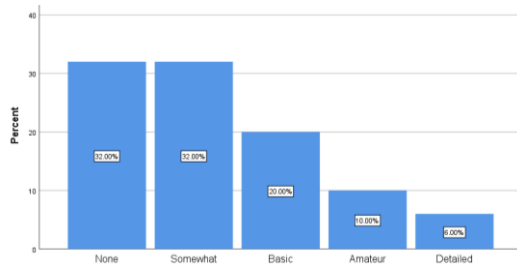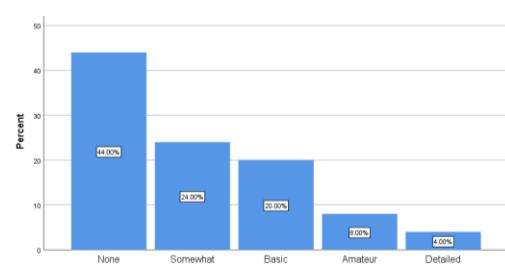

Figure-2 Landslide

Figure-3 Flash Floods

Figure-4 Wildfire

3. Knowledge about health-related issues after a disaster

People are more educated about the repercussions of a disaster, as seen in Figure 5, and have developed some emergency preparations at the individual level based on their limited knowledge. To get through a disaster, the family has first aid supplies and food rations on hand.

4. Awareness

To check the awareness of respondents they were asked about the existence of a Disaster management authority in the city and it is found that 64% are aware but 36% does even not know the existence of a Disaster management authority. But only 30% of respondents are aware of district disaster management plan. This is the major gap that has been identified and confirmed.

Figure 5: Health related issues after a disaster
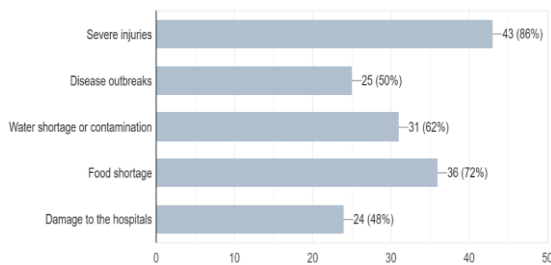(Source: Compiled by Author)

Figure 6: Response on Public's Interaction with Authorities
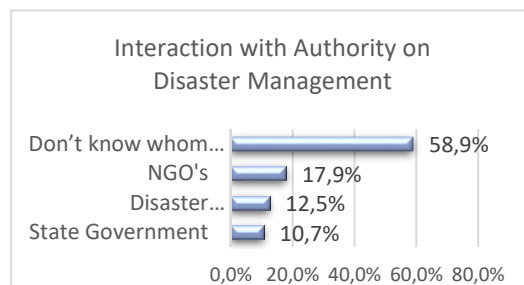(Source: Compiled by Author)

Table 2: Witnessing of Disasters

Age range		Witnessed Earthquake	Witnessed Landslide	Witnessed Flash Floods	Witnessed Wildfire
Total	Mean	.7600	.4000	.2600	.3200
	N	50	50	50	50
	Std. Deviation	.43142	.49487	.44309	.47121

Table 2 suggests that apart from earthquakes and landslides, people are more versed with Wildfires as they are a more recent phenomenon to happen across the city and state and have more recall value than flash floods that changes the overall data values. The awareness is mostly seen in the younger generation (with age <25 years) who have been living in the city for last 10 years. People with age > 60 and who have been living in the city for more than 30 years have witnessed more earthquakes, which correlates with the public knowledge of 2 major earthquakes striking in the area in 1991 (in Uttarkashi) and 1999 (in Chamoli).

5. Creating knowledge and awareness

Figure 7 illustrates that the most frequent means of obtaining disaster management information is via mobile phones (SMS Alerts) and social media. Television is the third greatest way to get information. So, while mobile phones (SMS Alerts), social media, and television are the most convenient ways to get information, brochures, emails, and hoarding may also be helpful in raising public awareness about disaster management.
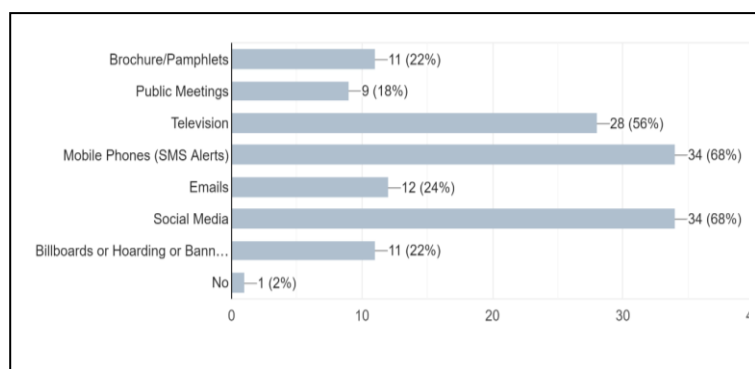

Figure 7: Mode of receiving the information on Disaster
Management (Source: Compiled by Author)

DISCUSSION AND RECOMMENDATION

The data suggests that there is a huge gap between the action plan prepared by the District Authority and the citizens. The basic knowledge and awareness of the public has is based on the events that have occurred in the past and being publicised through electronic and print media. Landslides and flash floods occur during monsoons and wildfires are a more recent events occurring during dry weather season. Similar is the case of Flash floods, where people tend to build their houses near riverbanks, and authorities fail to sensitize them on the perils of the flash floods that the rivers are prone to during the monsoons and heavy rains.

Wildfires have become a common phenomenon during drier weather. However, all fires are not ignited naturally, as sometimes, people knowingly or unknowingly contribute to igniting these fires which burn hectares of forests and thus affect the overall climate change. Areas need to be identified that are susceptible to these wildfires for people to avoid construction in those areas.

The DDMP should include a chapter on public engagement as in the State plan, with clearly identified action points. They should cover all departments as listed in the plan in one platform rather than individual departments formulating them. A common programme can be prepared for knowledge and awareness dispersion. A common programme can be more efficient than individual programmes saving on both cost and time. Public engagement seminars and meetings can be organised at the ward level to spread information on disaster management and gather the inputs pertaining to the area and for further improvements in the plan.

In this new age of faster communications through the internet, it is getting easier to reach to masses in a short amount of time. Online surveys and feedback sections can be created to gather information about the knowledge public has to ascertain its authenticity. Then, a properly curated knowledge base can be circulated amongst the people to enhance their awareness level. Effective, purposeful training and awareness programmes are to be timely conducted (Marskole et.al. 2018).

As conclusion, on studying the data above, it is possible to deduce that there is a large gap in public knowledge and awareness of natural disasters versus the plan proposed in the District Disaster Management Plan. The need of the hour is to identify a scientific method to actively engage the local public in formulating further disaster management plans keeping in mind their concerns. It can be achieved only through involving the people in the planning process, assessing their knowledge of the various disasters the city is vulnerable to, and creating programmes to increase that knowledge and awareness for the benefit of both the citizens and authorities.

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