Vulnerability Analysis for Tourists Visiting Nainital, a Disaster Prone Himalayan Township of India

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Abstract:
Indian Himalayan Region has been witnessing an unprecedented increase in tourism, which is disturbing the fragile ecosystem of the region. Disasters like earthquakes, landslides, floods and road accidents occur on a regular basis. The 2013 Kedarnath floods have highlighted the vulnerability of tourists visiting these regions where over 4000 tourists lost their lives. It is important to understand the vulnerability profile of tourists visiting different parts of Indian Himalayan Region. Nainital Townhsip of Uttarakhand state of India is a popular tourist destination prone to many natural disasters. The research identifies 12 indicators to understand the vulnerability of the tourists on the basis of extensive literature survey. The study collects information about these 12 indicators by surveying 200 randomly selected tourists visiting Nainital. It was found that tourists visiting Nainital are less vulnerable on account of their physical and socio-economic conditions. This implies that in case of any calamity affecting Nainital Township, the administrative responsibilities for rescue and evacuation of tourists will be easier as compared to other disaster prone hilly settlements. The inputs procured from such studies could be used for preparing rescue and evacuation plans for such regions.
Key Words: Tourism, Disasters, Vulnerability, Indian Himalayan Region

I. INTRODUCTION

The Indian Himalayan Region has been attracting tourists from historic times for nature, sports, pilgrimage, adventure, spirituality, peace and many cultural aspects. The region encompasses several sensitive and fragile human-environment systems and carrying capacities of such regions are a matter of great concern (NITI Aayog, 2018). The region has always been witnessing various disasters like earthquakes, landslides, avalanches, blizzards, cloudbursts and road accidents. However, this problem got special attention during 2013 Kedarnath floods which witnessed a loss of over 4000 lives, most of which were the tourists (NIDM, 2013). Such situations put a great pressure on the administration when they have to rescue and evacuate the tourist to safer places. In recent years there has been an unprecedented expansion of tourism in Nainital and the surrounding areas. This has resulted in an unplanned growth in the tourism industry. This has definitely boosted the economy of the region and has provided employment potential, infrastructure and improved services to the local population. Nainital Township is prone to many disasters like earthquakes, floods, landslides, road accidents etc. (DDMC, 2011). The daily floating population of Nainital is around 20,000 to 50,000 during tourists season. In this study total 200 tourists (randomly selected) were interviewed and the information provided by them regarding their vulnerability for 12 identified indicators is discussed in this section. The analysis gives an idea about the profile of tourist population visiting Nainital. These studies would be helpful for the administration in case of calamities for preparedness planning of rescue and evacuation for the tourist.

II. LITERATURE REVIEW

Cannon (2000) has given a view of social vulnerability including various categories of indicators which are: livelihood and its resilience, base-line status – well-being, health (physical and mental), nutrition, self-protection (quality of house construction and location, adequacy of building controls; large-scale measures, governance).

UNDP (2004) has given a list of indicators for economic vulnerability, type of economic activities, dependency and quality of the environment, demography, health and sanitation, early warning capacity, education and development. According to UNDP, vulnerability is the factor that determines a condition of human development opposite from the ideal one, namely sustainability. At the macro level, this includes economic efficiency, environmental integrity, and human well-being. At the micro level, vulnerability is the lack of sustainable livelihood, meaning a lack of local knowledge, science and technology and policy structures. UNDP recognizes that it is not only a lack (in terms of quantity and quality) of resources that indicates a

situation of vulnerability, but more importantly a "lack of access" to and "capacity" to use these resources efficiently (Sen, 1973).

The framework of Capacities and Vulnerabilities given by Anderson and Woodrow as referred by Twigg et. al. (2001) is a matrix meant for analyzing people's vulnerabilities and capacities in three broad, interrelated areas: physical/material, social/organizational and motivational/attitudinal. CVA is an easy to use, realistic and indicative tool which has wide applications in the field of disaster mitigation.

An important model designed for peoples vulnerability and their livelihood conditions is 'Disaster Pressure and Release (PAR) Model' given by Blakie et. al. (1994). This model has combined human factor to the study of disasters and illustrates how human actions and structures impact disasters. The 'Access model' was developed along with the PAR model. According to this model the key to understanding the way people cope with hazards is the livelihood strategies that people choose. Both these models recognize that the most vulnerable live with constant hazards such as inadequate shelter, dangerous locations, lack of access to food and regular income and poor health – which can become disasters. The strength of PAR / Access models as given by Palakudiyil and Todd (2003) is that 'they take a wide ranging view of vulnerability, providing a framework for defining the way people live and earn their living, as well as their vulnerability to disaster.'

Sustainable Livelihood Approach (SLA) is given by Department for International Development (DFID, 2001) which states that 'A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.' The SL framework is built around five inter – related factors that determine livelihoods: the vulnerability context in which people live their lives; the livelihood assets they possess; the transforming structures and processes which influence positively and negatively the livelihood strategies available to people; and the livelihood outcomes resulting from their interaction. SLA encompasses a more holistic approach which focuses primarily on vulnerable people's livelihoods. It analyses the multiple factors that affect them and gives appropriate importance to the interrelationship between the various factors that affect people's livelihoods. (Palakudiyil and Todd, 2003).

Triulzi et.al. (2003) have given a scheme based on World bank approach to illustrate that households are vulnerable to suffering an undesirable outcome, and this vulnerability comes from exposure to risk and cause socio-economical setback.

Cutter et.al. (2003) has developed and used SoVI (Social Vulnerability Index) model for measuring social vulnerability. With this model, authors have been able to compare the social vulnerability of all counties in the US using a statistical analysis of 42 independent variables. The strength of this approach lies in the multitude of variables and in the fact that the authors have been able to explain 76.4% of the variance among US counties with the help of 11 factors (e.g. personal wealth, age, density of the built environment, single-sector economic dependence). The SoVI index does not take hazard event frequency or magnitude into account, but the authors suggest expanding of the model by adding both hazards as well as economic loss data to the model.

Kumpulainen (2006) has given a methodology for measuring vulnerability in quantitative terms by a range of indicators. The overall regional vulnerability is measured as a combination of damage potential and coping capacity. The basic criteria for choosing vulnerability indicators was that they should cover both damage potential and coping capacity, as well as the range of all three vulnerability dimensions viz. physical, social and economical. Kumpulainen, (2006) has used Delphi technique for weighing the indicators. The weighing was done by testing different weighing combinations for the four feasible indicators. The author also carried out the 'sensitivity test' with the four combinations of regional GDP, population density, fragmented natural areas and national GDP.

The community vulnerability index of South-East Queensland is an indication of the relative contribution made to overall community risk (AGSO, 2000). That is, the lower the number, the greater the vulnerability to a natural hazard event. The index highlights the importance of understanding communities in a spatial context. The Cities Project has developed a series of indexes, based on individual social indicators that reflect the relative level of hazard exposure and the relative level of community vulnerability. Approximately 32 social indicators were used to model community vulnerability in the South-East Queensland Cities Project, some of which included: households with access to a car, single-parent households, those aged over 65 and less than 5 years, people from different cultural/language backgrounds etc. By drawing the social indicators together, a 'risk index' has been produced that is used to create 'risk surface' maps to illustrate the spatial relationship between levels of exposure and vulnerability.

Kim et. al. (2009) in the discussion paper based on work in progress for the methodological approach towards the coastal vulnerability assessment, particularly from the socioeconomic perspective have emphasized on the vulnerability assessment using indicators. The method is developed for application in one of the coastal municipalities in Melbourne metropolitan area to assess socioeconomic vulnerability. The authors state that the choice of appropriate coastal vulnerability indicators for a particular coastal hazard is dependent on many

factors. The indicators should include the hazard characteristics, but from the socioeconomic perspective, indicators should also be ones that can show the degree of development in the area, typical cultural and social characteristics and economic situation.

III. STUDY AREA – NAINITAL TOWNSHIP

Nainital, one of the most alluring hill stations of India, is often called as the 'Lake District of India'. It is located in Uttarakhand state in Northern India (Fig 1). The district hosts some of the most scenic lakes in India spread over an area of 4251 sq.kms. Nainital Township is located at an altitude of 1,938 meters around Naini Lake (Fig 2). Township of Nainital is the headquarters of Nainital Lake District and Kumaon Mandal. Nainital, known for its salubrious climate and scenic beauty, is a popular destination in the northern tourist circuit (DMMC, 2010). Nainital attracts thousands of tourists round the year. Cradled in the Himalayan foothills, Nainital acts as the gateway to Kumaon hills. The hill towns of Almora and Ranikhet are 65 km and 58 km distant respectively. Kausani, famous for its unparalleled view of 250 km wide Himalayan panorama is 116 Km away from Nainital. Pithoragarh is at a distance of 131 km while the Pindari Glacier, a popular destination for mountaineers and trekkers, is 236 km away. The world famous Jim Corbett National Park is 117 km away from Nainital. Nainital is also an important administrative town in the State having the High Court and well known institutions such as Academy of Administration, Aryabhatta Research Institute of Observational Sciences (ARIES), Office of Kumaon Mandal Vikas Nigam and Kumaon University. The total area of the Nainital Township is 11.73 sq.km and the population of Nainital was 41,377 as per Census of India 2011.
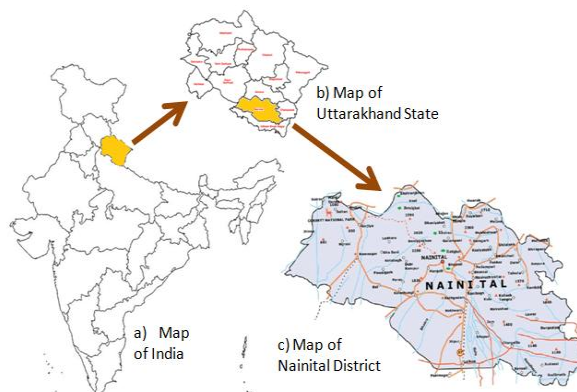

Figure 1: Location of Nainital District

Figure 2: Nainital Township (Source: UTDB, 2020)

Nainital is rapidly developing due to its tourism potentials and increase of population due to inflow of tourists. The daily floating population of the town is between 20,000 to 50,000 during tourist season. The number of tourists visiting Nainital is continuously growing. The most visited place in Nainital is the Mall Road which runs along lake on one side and shops, restaurants and small hotels on the other side. The shops are mostly selling daily commodities and souvenirs for tourists. The spate of new constructions in Nainital has led to the concern for environmental pollution and degradation in Nainital. According to Joshi and Pant (1990) the main factors behind the popularity of Nainital as a hill station and tourist resort are:
1. The presence of a magnificent lake and its picturesque surroundings.

2. An easy approach from the nearby plains of northern India, almost all the important towns of North India, from where the major portion of the tourist traffic arises, lie within an eight hour journey by rail or road.
3. During summers the great difference in temperature between the Indo-Gangetic plains and the adjoining Himalayan region is a major attraction. The climate of Nainital is cool even during summer when the mercury soars to 45^0C or higher in the plains.
4. Almost all other hill stations such as Srinagar, Darjeeling and Shimla are beset with political disturbances, overcrowding and other associated problems so that they no longer provide the safety, solitude and peaceful atmosphere for relaxation and recreation. Nainital offers a safe, alternative destination today.

IV. VULNERABILITY INDICATORS FOR TOURISTS IN NAINITAL TOWNSHIP

A comprehensive literature survey is conducted for the identification of vulnerability indicators for the tourists, as presented in previous section. The literature survey resulted in understanding the implications and significance of all the terms relevant for socio-economic vulnerability assessment for tourist population. The review of indicators for vulnerability given by various authors worldwide, abets the inventory of indicators for vulnerability of Nainital Township. An inventory of numerous approaches and models for vulnerability assessment given by many experts working in this area gives a comprehensive understanding about vulnerability behavior. On the basis of this literature review, following 12 indicators are identified for analyzing socio-economic vulnerabilities of tourists visiting Nainital Township.

1. Religion
2. Caste
3. Age
4. Proximity from Native Place
5. Education
6. Occupation
7. Family Income
8. Mode of Transport
9. Group of Tourists
10. Local Contacts
11. Frequency of Visits
12. Awareness about Disasters

V. DISCUSSION

The data is collected for all these 12 parameters and the results affecting the vulnerability of the tourists are discussed in the following section.

Religion of Tourists

It was seen that almost 80% tourists visiting Nainital are Hindus. Out of the remaining 20% it is seen that maximum were Sikhs forming 7% of the total sample tourists followed by Christians, Muslims and others forming 6%, 5% and 2% of the total tourist population (Figure 3). It could be said that Hindus are the least vulnerable because of their majority and the presence of high Hindu local population in Nainital.
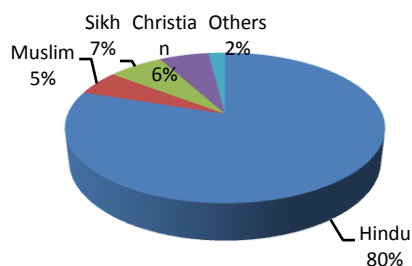

Figure 3: Religions of tourists in Nainital

Caste Structure

It was seen that almost 69% tourists visiting Nainital during December 2010 belonged to general category and hence were less vulnerable. Out of the rest 31% almost 19% belonged to other backward classes. The percentage of tourists belonging to SC and ST category was almost equal which almost 6% was. Hence these 31% tourists were more vulnerable for being from the backward classes. (Figure 4)
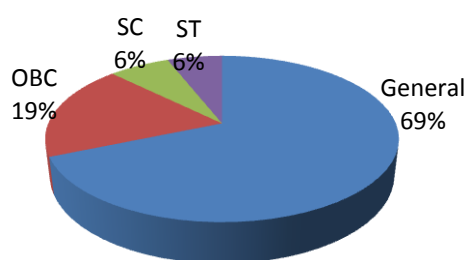
Figure 4: Castes of Tourists in Nainital

Age Structure

It was observed that most of the tourists visiting Nainital are in the ages from 15 to 40 (60%). The tourists in the age group 41 to 59 were also significant (almost 30%). It is known that the population in the age group from 15 to 59 is less vulnerable because of their self dependency and health conditions (Figure 5). Hence the vulnerability of tourists visiting Nainital is very low as far as their age structures are concerned.
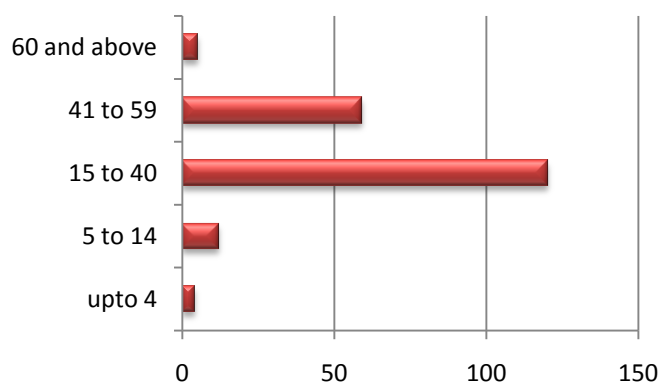

Figure 5: Age structure of tourists in Nainital

Proximity of Native Place

Tourists from all states of northen, southern, western and eastern India visit Nainital (Figure 6). Tourists coming from nearby regions are less vulnerable because of their connectivity with their hometown and familiarity with region. On the other hand tourists coming from far away states are more vulnerable because of their unfamiliarity with the region.

The survey shows that Nainital gets its maximum tourists from Delhi and Uttar Pradesh. This is because of proximity of these regions which take upto eight hours travel time to reach Nainital. Hence, working people can easily take out some time and spend some leisure time in Nainital. Figure 6 shows the number of tourists surveyed with their native states. It could be said that the tourists coming from Delhi, UttarPradesh and Uttarakhand are least vulnerable because of the proximity of their home towns and because of presence of large number of other tourists from their hometowns or nearby areas. For the same reasons the tourists coming from other north Indian states like Haryana, Himachal Pradesh, Punjab, Rajasthan and Bihar could be said to have moderate vulnerability.

The highly vulnerable tourists on account of locations of their home towns could be those who belonged to far flung places from southern and eastern India. Figure 7 shows the percentage of tourists with different vulnerabilities on account of the state they were coming from. It is known that almost 25% tourists are most vulnerable, 15% are moderately vulnerable while the rest 60% tourists are less vulnerable because of the locations of their hometowns.
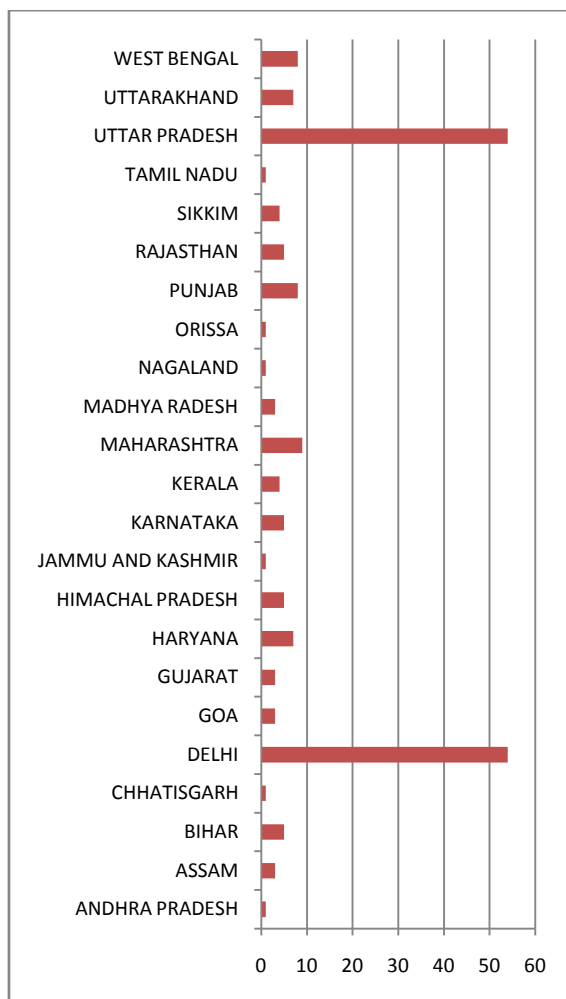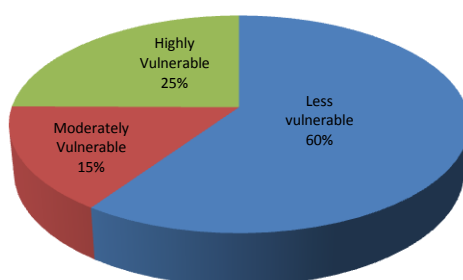
Figure 6: Native States of Tourists Visiting Nainital

Figure 7: Vulnerability of tourists on account of their native states

Education

The entire tourists interviewed were literate. The lowest level of education found amongst the tourists was being educated upto XII. A significant 48% of tourists were graduates. Tourists who have pursued higher education were also in significantly high percentage of 37% (Figure 8). It shows that the surveyed tourists were not vulnerable as far as their education level is concerned.
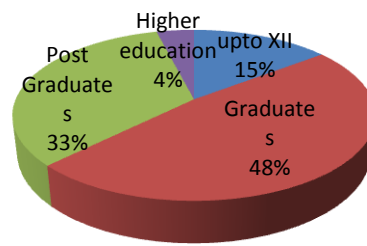
Figure 8: Education Level Attained By the Tourists

Occupation

Almost 32% surveyed tourists were having a government job which makes them least vulnerable as their job security is concerned. 31% have private service and the other 25% have their own business. The lower percentages of students (7%) and unemployed tourists (5%) show moderate vulnerability (Figure 9).
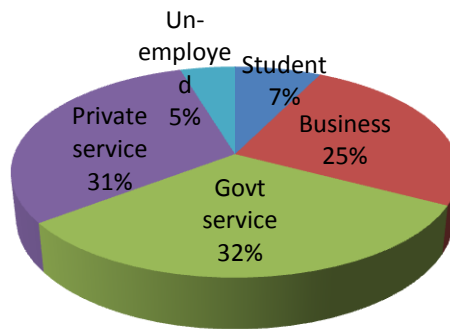

Figure 9: Occupations of Tourists

Income

The tourists were asked their monthly family income and the per capita monthly income of the family was calculated. It was found to be varying from Rs 2000 to Rs. 3,00,000. Hence it can be concluded that economically poor tourists were not found to be visiting Nainital. The lowest category of income i.e. per capita family income being upto 5000 Rs had upto 8% tourists which are said to be moderately vulnerable. On the other hand almost 58% tourists who have per capita family income more than 10,000 Rs are resilient for disasters as far as their economic conditions are concerned (Figure 10).
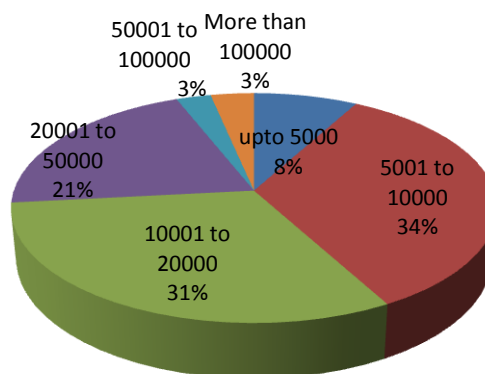

Figure 10: Per capita monthly income of tourists

Mode of Transport Taken by Tourists

It was found that around 46% of the tourists were visiting Nainital in their own cars or private taxis. Other 46% tourists have taken private buses to reach Nainital. The cheapest mode of transport i.e. public buses had been taken by only 1 % of the tourists (Figure 11). The fact reinforces the fact that the tourists surveyed were mostly from economically well off sections of the society.
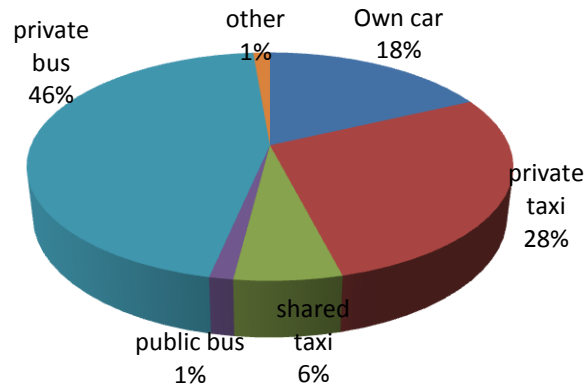

Figure 11: Mode of transport taken by tourists to reach Nainital

Groups of Tourists

Tourists were found to be visiting Nainital either alone or in groups. Single tourists are considered to be more vulnerable on account of their isolated behavior and lack of contacts with other tourists. Hence it could be said that 4.5 % tourists were most vulnerable followed by a significant 74.5% tourists which were visiting in groups of 2 to 5. The rest 23% tourist could be said to have moderate to low vulnerability because of their presence in larger groups (Figure 12).
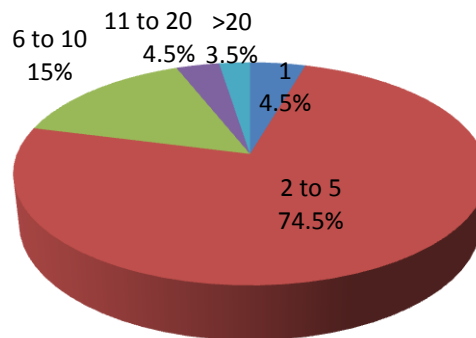

Figure 12: Groups of tourists

Local Contacts

Tourists were asked if they have any local contacts in Nainital because this fact would make them more connected with the township and they can avail additional assistance from their contacts in case of calamities. The results as displayed in Figure 13 state that almost 72% tourists did not had any local connections in Nainital and hence show high social vulnerability. Other 19% tourists having link with just 1 local family can be said to have lower vulnerability, while the rest 9% tourists having links with many local families display very low vulnerability.
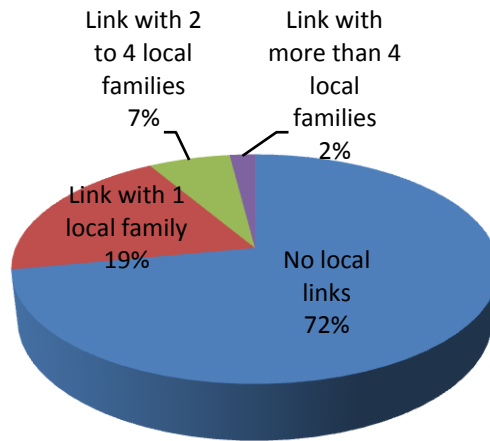
Figure 13: Local links of tourists

Frequency of Visits

It was found that out of all the tourists surveyed almost 63% were visiting Nainital for the first time which makes them less aware about the township and more vulnerable. A significant 24% tourists were found to be visiting Nainital on regular basis i.e. once or more times in a year. This section of tourists were least vulnerable because of their familiarity with the city. The rest 13% tourists can be said to have moderate vulnerability (Figure 14).
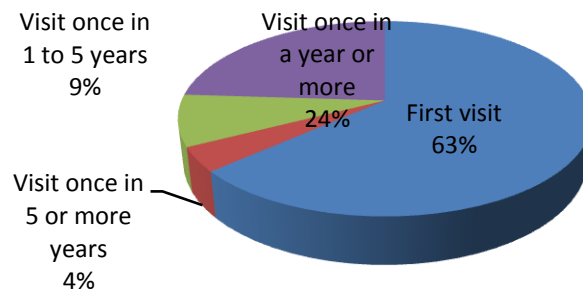

Figure 14: Frequency of visits of tourists

Awareness: The tourists were asked questions to know about their awareness about disaster vulnerability of Nainital and about actions those should be taken in case of any disastrous situation. It was found that more than half of the tourists displayed bad awareness which makes them more vulnerable. A significant percentage displayed moderate vulnerability on account of their moderate knowledge. The tourists with good knowledge and hence low vulnerability were found to be very low (Figure 15 and Figure 16).
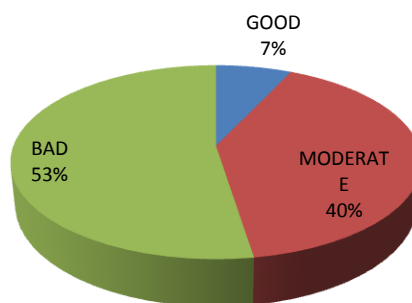

Figure 15: Awareness of tourists about disaster vulnerability of Nainital
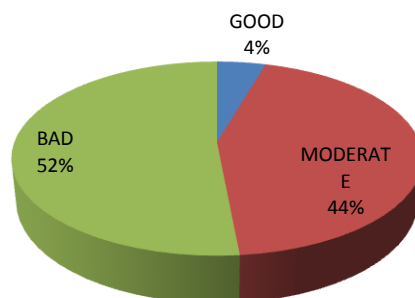
Figure 16: Awareness of tourists about actions to be taken in a post disaster phase

VI. CONCLUSION

Economy of Nainital is dependent on very high number of tourists coming from all over India and giving rise to many occupations for e.g. hotels, restaurants, manufacturing and selling of candles, boating and other occupations. The 200 tourists surveyed displayed low socio-economic vulnerability to disasters. Most of the tourists displayed resilience to disasters on account of their age, education, health, high family income etc. This implies that in case of any calamity affecting Nainital Township, the administrative responsibilities for rescue and evacuation of tourists will be easier as compared to other disaster prone hilly settlements.

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