INDIAN STREAMS RESEARCH JOURNAL
ISSN NO : 2230-7850
IMPACT FACTOR : 5.1651 (UIF)
VOLUME - 15 | ISSUE - 1 | FEBRUARY – 2025

KOTAGIRI TALUK OF NILGIRIS DISTRICT: PEOPLE'S PERCEPTION IN THEIR RISK, MITIGATION AND PREPAREDNESS

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ABSTRACT:

A disaster is an unfortunate event caused by factors mostly beyond human control that often strikes suddenly and without notice, causing or threatening major disruption of life and property. The tribal population of Nilgiris district lived in unique physical, social- economic and cultural environmental isolation from general population. It also results in cultural differences and perspectives. This variation in how individuals comprehend, understand, experience, evaluate, and manage the risk in today's environment is also ascribed to a cultural worldview, which is generated from a combination of traditional beliefs and values, knowledge, tradition, faith, social system, land ownership, length of time in coexistence with or occupation of a particular geographical region, and historical knowledge. Landslide risk perception is also based on human interaction and dependence on the natural environment, and can be heightened by a close interdependence. The majority of tribal population living under the high risk of landslide prone zones. Therefore, it is very important to study on their perception on risk, trust, vulnerability and mitigation related to landslide, apart from this their socio- economic living conditions were also looked upon.

KEYWORDS : *Environmental Isolation, Nilgiris, Traditional, Landslide, Hazard Zonation.*

INTRODUCTION:

Natural hazards such as earthquakes, tsunamis, cyclones, floods, and other natural disasters are examples. A disaster can substantially disrupt a community's or society's functioning and result in human, material, economic, or environmental losses that are greater than the community's or society's ability to cope with using its own resources. Disasters can have human causes, even if they are often caused by nature. Disasters are very dangerous as they destroy development of infrastructure created over the years in different sectors. Affected countries are forced to go back to earlier stages of development. Thus, precious time, effort and money, which should have been devoted to development work, have to be devoted to rehabilitation and fresh investments to put the country 'back on tract'. Natural disasters impede economic and social progress.

It is very important to study on their perception on risk, trust, vulnerability and mitigation related to landslide, apart from this their socio- economic living conditions were also looked upon. When it comes to developing systems, practices, and policies to protect local populations, the perception of risk is critical. This is especially true when risk mitigation strategies include non-structural measures like relocation and early warning systems, which require the active participation of the people in question. Here we understand the risk perception as awareness of risk as created within

the area tribal people lived in, knowledge about past hazard event or personal experience of them and prescribed probability of future event.

REVIEW OF LITERATURE

A review of published research works has been conducted to better understand landslide mapping, factors influencing landslides, geophysical survey and geotechnical studies in landslide studies, instrumentation and slope monitoring techniques, and forewarning for rainfall-induced landslides published by various authors throughout the world. A large number of the studies described in the literature use geomatics, geophysics, and geotechnical studies for landslide mapping, investigation, characterization, quantification, and forewarning. The following review summarizes work done in several countries around the world, and also a comparison of instruments and methods used in landslide investigations.

Sharpe (1938) defines a landslide as an observable movement involving a relatively dry quantity of earth material. A landslide is a loose or separated part of a slope or sloping mass that slides down a landslide.

Landslides, according to Vames (1984), are "almost all forms of mass movements on a slope, including some that entail little or no actual sliding, such as rock falls, topples, and debris flow." Landslides, according to Brusden (1984), are a unique form of mass transportation and a process that does not require the use of a transportation medium such as water, air, or ice.

"The outward and downward gravitational movement of the mass of the earth without the aid of flowing water as a transport agent," according to Crozier (1986). According to Hutchinson, a landslide is "a very fast mass wasting process that causes the downward slope motion of a mass of rock, rubble, or soil due to a variety of external stimuli" (1988).

AIMS AND OBJECTIVES

The aim of the study is to demarcate the landslide areas of Nilgiris district and to evaluate the impact and their vulnerability level on the tribal group.

- To observe the landscape of Nilgiris district.
- To examine the causative factors of landslide in Nilgiris district.
- To delineate the landslide prone zones in Nilgiris district
- To construct best model for assessing the landslide vulnerable zones.

DATA AND METHODOLOGY

The current research is based on both primary and secondary sources of information. The secondary data set comprises a satellite image of Landsat 8 OLI data, which was acquired by the USGS in March 2019. The State Ground and Surface Water Board, Taramani, provided monthly rainfall statistics for various locations in the Nilgiri district. EOSDIS has been used to download land use land cover for the Nilgiri district. The USGS has provided SRTM data with a resolution of 30 meters. The Geological Survey of India provided data on soil, soil depth, and lithology. Landslide data has been acquired from the Nilgiris district's Public Work Department for a landslide hotspot that occurred earlier. The Digital Elevation Model (DEM) in ArcGIS was used to construct slope and elevation models. Lineament, lineament density, moisture stress, and NDVI were all calculated using satellite imagery.

The landslide susceptibility study is carried out with the use of several layers of data gathered from various sources. The Analytic Hierarchy Process (AHP), Frequency ratio model, Binary logistic Regression model, and Shannon's Entropy are four strategies employed in this study to achieve more accurate results. These four strategies have been discussed briefly below. Furthermore, to find out more accurate landslide predicting zones, a susceptibility map has been formed with the help of the maps obtained by using these four techniques by overlaying each map together in ArcGIS software. The final map displays tribal settlements that are located in high-risk landslide zones. For primary data collection, the samples were chosen using a random sampling method and the snow ball sampling method.

PEOPLES PERCEPTION

Perception is the process of organizing, identifying, and interpreting sensory data in order to represent and comprehend the environment. Perception is based on complicated neural system operations, but it appears to be relatively painless since this processing occurs outside of conscious awareness. Perceptions of risk are one of the most important factors that influence local citizens' behavior (Tulloch and Lupton 2003), and hence have a significant impact on community resilience. The ways in which choices are implemented following analysis and zoning processes have an impact on public perceptions of landslide risks, implying that effective communication is critical to the effectiveness of risk management systems (Lombardi 2005; Albanesi et al. 2011). If communication is to be effective, it must be bidirectional and include listening to residents' thoughts as well as comprehending their perspectives and perceptions. The empirical analysis of perceptions raises a series of complex issues which demand an interdisciplinary approach, including the role of socio-economic structure, social networks, cultural practices and social identities.

People's motivation to support or implement preparedness, prevention, and adaptation measures is influenced in part by their perception of risk, but people are less concerned about risks they are familiar with (Jurt 2009). Risk perceptions, according to Kuhlicke et al. (2010), are influenced by elements such as values and feelings, as well as cultural influences (Macgill 1989). Disaster risk is a combination of hazard and vulnerability, so the disaster arises from not just the landslide hazard but also from the vulnerability to the hazard (O'Keefe et al. 1976; Hewitt 1983; Lewis 1999; Wisner et al. 2004).

The term vulnerability in one paper is used (quote): "vulnerability is a susceptibility for rare, through big, risks, while the victims can hardly change the course of events and contribute little or nothing to recovery" (Laurentius 1994). Vulnerability can be defined as a proclivity to suffer damage, i.e., a state of fragility, or a group of factors that increase a stake's susceptibility to the influence of a damaging phenomenon. Vulnerability, on the other hand, is the inability to predict, deal with, avoid, adapt to, and recover from hazards (Nathan, 2005). This classification is adapted from various existing frameworks and consists of (1) physical and socio-ecological exposure, and (2) a set of incapacities to prevent, prepare for, face or cope with hazards and disasters: physical, legal, organizational, technical, political, socio-economic, psychological and cultural weaknesses. The overall vulnerability is a combination of some or all of these dimensions. To lessen the likelihood of a landslide tragedy, a thorough understanding of the numerous components of vulnerability is essential, which is the fundamental purpose for this study. Landslide vulnerability must be assessed in terms of its physical, social, economic, cultural, environmental, and institutional elements (Alexander 2004; Glade 2003; Glade et al. 2005). The physical components of disasters including environmental dangers have traditionally been the focus of investigation. Since at least the 1940s, it has been recognized that concentrating on only physical components of risks and associated mitigation strategies is insufficient to reduce disaster impacts (White 1942).

People interpret information supplied with relation to their expectations, experience, beliefs, and misconceptions, and these, in turn, influence their decision- making and behavior when it comes to risk mitigation through social and behavioral channels (Dow and Cutter 2000; Paton 2008). Researchers, planners, and emergency managers must recognize variety in community traits and perceptual processes in order to construct resilience models that account for contingent linkages between hazard effects and community, cultural, geographic, and temporal aspects (Paton et al. 1999).

TRIBAL PEOPLE'S PERCEPTIONS TOWARDS LANDSLIDE RISK

Landslide risk perception is comprised of nine variables: occurrence of a landslide, intensity of a landslide, risk at home, risk at work, loss of control, threaten livelihood, affect quality of life, financial loss, and feeling safe. These variables under risk are taken from different literature based on perceptions of landslides, which is measured using a three-point Likert scale with an average of 1.5.

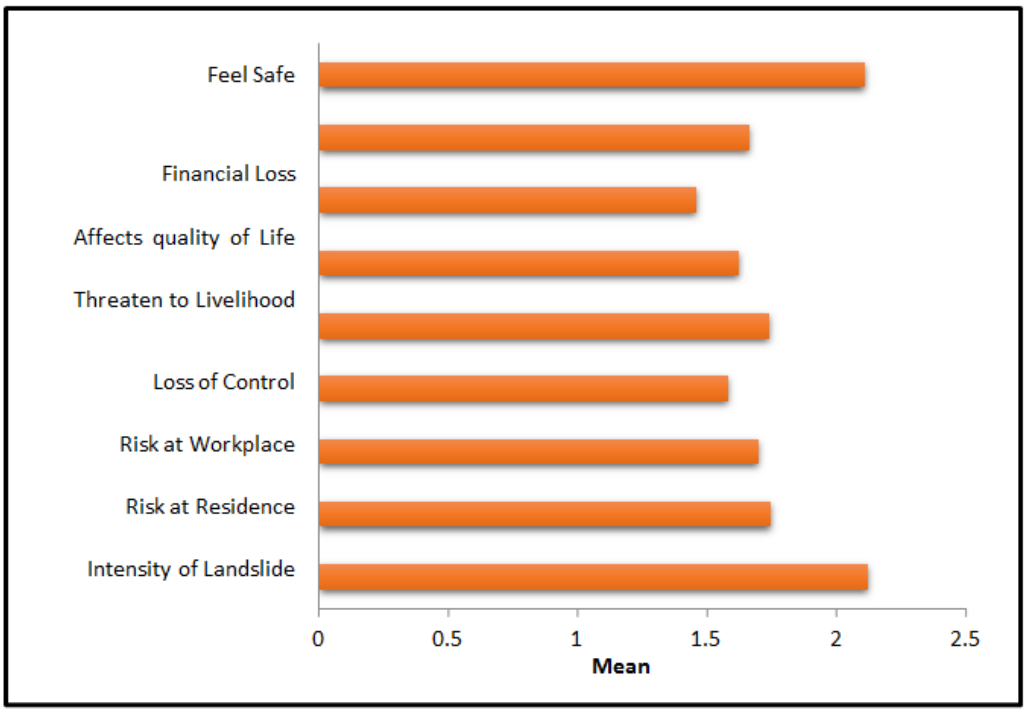
DESCRIPTIVE FOR LANDSLIDE RISK

Table: 5.11
Descriptive Statistics – Risk towards Landslide

Variables	Mean	SD	Count
Occurrence of Landslide	2.124	0.664	170
Intensity of Landslide	1.747	0.662	170
Risk at Residence	1.700	0.614	170
Risk at Workplace	1.582	0.641	170
Loss of Control	1.741	0.925	170
Threaten to Livelihood	1.624	0.696	170
Affects quality of Life	1.459	0.645	170
Financial Loss	1.665	0.688	170
Feel Safe	2.110	0.685	170
Risk	15.476	2.295	170

According to table 5.11 the risk of landslides among tribal people is higher in the condition of the variable- "Occurrence of landslide" with mean value of 2.124 and "Feel safe" with mean value of 2.11 when compared with others. When compared to other variables, the risk of a landslide is lower in the variable "Affects quality of life" (M = 1.459). With the exception of the variable "Affects quality of life" presented in Figure 5.1, where the blue dashed line represents the average mean value, it is also inferred that the risk of landslide is higher than the average. The Overall Mean Score of the risk towards landslide is 15.476, which is 57.33 percent this point out that the respondents' risk towards landslide is above 57 percent.

Figure 5.1
Mean Values – Risk towards Landslide



Independent sample 't' test

Perception of Landslide Risk by Gender

Ho: There is no significant difference between Male and Female on the risk towards landslides.

H1: There is a considerable variation in the risk of landslides between Males and Females.

In the Nilgiris district, an Independent-samples t-test has been conducted to differentiate the significant between male and female respondents in terms of the risk of landslide. Test shows that the null hypothesis has rejected due to low alpha value (<0.05). The mean score of female respondents (Mean = 15.5) is more than the male respondents (Mean = 14.4) shown in the Table 5.12. This shows that the female respondents feel more risk from landslides than the male respondents. As a result, it is established that there is a significant difference in the risk of landslides between male and female responders

TYPE OF FAMILY – RISK TOWARDS LANDSLIDE

The significant difference between the types of families of the participants in terms of the risk of landslide has been compared by using an independent-samples t- test. As the *P* value is less than the Sig. Value (0.01), which is 0.000, so, our Null Hypothesis has been rejected. Based on the mean value of the risk towards landslide, the Nuclear family has 16.813, which is more than the respondents from the Joint family (M = 13.039) shown in Table 5.13. This indicates that the nuclear family feels more risk towards landslide than the respondents from joint families. Hence, it is concluded that there is a statistically significant difference between the respondents from joint families and nuclear families with respect to the risk towards landslide. Nuclear families feel more risk as compared to joint families. This is because the joint families have elderly people among them who have the knowledge of the precautions to take against landslides. Nuclear families, on the other hand, tend to be younger generations with less experience and knowledge of landslide precautions.

Analysis of Variance

Education – Risk towards landslide

Ho: There is no significant difference between education on the risk towards landslide.

H1: There is significant difference between education on the risk towards landslide.

Table: 5.13
One Way ANOVA – Risk towards Landslide

	df	Sum of Squares	Mean Squares	F	Pr(>F)
Education	3	63.703	21.2341	4.263	0.006
Residuals	166	826.702	4.980	NA	NA

A one-way between-groups analysis of variance (ANOVA) has been conducted to find a significant difference between the educations of the interviewees with risk towards landslide.

The null hypothesis has been rejected, as shown in Table 5.14, because the P value (0.006) is less than the significance value (0.05). This indicates that there is a significant difference in the education of the interviewees' with respect to the risk towards landslide, F (3,166) = 4.263, p < 0.05. Tukey's HSD shows that there is no significant difference between illiterate and higher education (p = 0.652; > 0.05), primary and illiterate (p = 0.412; > 0.05) and secondary and primary (p = 0.741; > 0.05). It also shows that there is a significant difference between primary and higher education (p = 0.048; 0.05), secondary and higher education (p = 0.009; < 0.05) and secondary and illiterate (p = 0.044; < 0.05) as shown in Table 5.15. The maximum difference between the respondents' whose education qualifications are secondary and higher groups (the difference in mean is 1.824).

Table 5.14
One Way ANOVA - Tukey's HSD

	Diff	lwr	upr	p adj
Illiterate-Higher	0.681	-0.842	2.206	0.652
Primary-Higher	1.383	-0.070	2.837	0.048
Secondary-Higher	1.824	0.338	3.311	0.009
Primary-Illiterate	0.701	-0.475	1.879	0.412
Secondary-Illiterate	1.142	-0.075	2.360	0.044
Secondary-Primary	0.441	-0.687	1.5698	0.741

diff- difference between means of the two groups

Landslide risk perceptions dependent on the type of respondent's house Ho: There is no significant difference between respondent's type of house and their perception of risk towards landslide.

H1: There is significant variance between respondent's type of house and their perception of risk towards landslide.

The test was carried out to examine the differences between the groups of respondents who live in various types of houses and their perception of the risk of landslides. Table 5.16 reveals that there is a significant relationship between the respondent's house type and their opinion of landslide risk F (2, 167) = 10.533, p0.05.

Table: 5.15
One Way ANOVA – Type of house and risk towards Landslide

	df	Sum of Squares	Mean Squares	F	Pr(>F)
Type of House	2	99.736	49.868	10.533	0.000
Residuals	167	790.670	4.735	NA	NA

Tukey's HSD results in Table 5.17 demonstrate that there is no significant variation in perception of risk of landslide between respondents staying in pucca and kacha houses (p = 0.870, > 0.05), but there is a significant difference in perception of risk of landslide between respondents staying in semi-pucca houses and pucca houses (p = 0.004, 0.05). Respondents in kacha houses and semi-pucca dwellings exhibited similar perceptions (p = 0.000, 0.05). Those living in semi-pucca and pucca houses have the greatest difference between them (Difference of mean is 1.756). This could be because respondents from semi-pucca houses believe their homes will be destroyed by a landslide, but respondents from pucca houses and kacha houses believe their homes will be destroyed by a landslide.

Table 5.16
One Way ANOVA - Tukey's HSD

	diff	lwr	upr	p adj
Pucca-Kacha	-0.269	-1.534	0.996	0.870
Semi-Pucca - Pucca	1.756	-3.034	-0.478	0.004
Kachcha- Semi - Pucca	1.487	-2.331	-0.643	0.000

diff- difference between means of the two groups
lwr, upr – lower and upper bound of the confidence interval at 95% p adj-p value after adjustment for the multiple comparisons.

AGE OF THE RESPONDENTS – RISK TOWARDS LANDSLIDE

Ho: There is no significant difference between respondent's age and their perception of risk towards landslide.

H1: There is significant difference between respondent's age and their perception of risk towards landslide.

Table 5.18 reveals that the p value is less than the significant value of 0.05, indicating that the null hypothesis has been rejected. It means there is a significant difference between the age of the respondents and the perception of risk towards landslide, F (2, 167) = 5.538, p<0.05. Tukey's HSD in Table 5.19 shows that there is no significant difference in perception among the age groups of less than 25 years and above 65 years (p = 0.004, < 0.05). Similarly, there is a significant difference between the age groups of 25-65 and less than 25 (p = 0.021, < 0.05). But the maximum difference between the age groups is less than 25, and greater than 65 (Difference of mean is 2.873). There is no significant difference between the age groups of less than 25 and 25-65 (p = 0.314, <0.05).

Table: 5.17
One Way ANOVA – Age and risk towards Landslide

	df	Sum of Squares	Mean Squares	F	Pr(>F)
Age	2	55.440	27.290	5.538	0.004
Residuals	167	835.000	5.000	NA	NA

Table 5.18
One Way ANOVA - Tukey's HSD

	diff	lwr	upr	p adj
>65 - <25	2.873	0.778	4.968	0.004
25-65 - <25	2.358	0.285	4.431	0.021
25-65 - >65	-0.514	-1.349	0.320	0.314

diff- difference between means of the two groups
lwr, upr – lower and upper bound of the confidence interval at 95%
p adj-p value after adjustment for the multiple comparisons.

5.4.4 Multiple Regression – Risk Perception towards landslide and Socio Economic status

The determination of a statistical relationship between two or multiple variables is called regression. Independent variables are the factors that influence the behaviour of a dependent variable. In this regression, respondents' risk towards landslide has been taken as a dependent variable, whereas age, gender, education, occupation, monthly income, marital status, type of house, type of family, family size, and year of stay are taken as independent variables. Multiple regressions have been conducted to identify the best linear combination of age, gender, education, occupation, monthly income, marital status, type of house, type of family, family size, and year of stay for predicting the risk towards landslide.

Table 5.19
Multiple Regression's Model summary – Risk towards landslides

Statistics	Values
Residual standard error:	1.357
degrees of freedom	159
Multiple R-squared:	0.6714,
Adjusted R-squared:	0.6507
F-statistic:	32.48
F-statistics with DF	10 and 159
p-value	0.000

The R-squared value, also known as the coefficient of determination, is 0.67, indicating that the current model accounts for a significant percentage of the variance in the output variable. The adjusted R-squared value is 0.65, indicating that the socio- economic level of the respondents in the Nilgiri

district can predict 65 percent of the variance in the measure of landslide risk, which is a significant effect (Cohen, 1988).

Table 5.20
Multiple Regression's Coefficients – Risk towards landslides

	Estimate	Std.Error	t value	Pr(>|t|)
(Intercept)	4.59916	1.40595	3.271	0.001
Age	0.03148	0.01201	2.621	0.009
Gender	1.39952	0.27382	5.111	0.000
Education	0.62636	0.17039	3.676	0.000
Occupation	0.24959	0.06524	3.825	0.000
Monthly Income	1.00039	0.24171	4.139	0.000
Marital Status	-0.67665	0.25134	-2.692	0.007
Type of House	-1.00319	0.20088	-4.994	0.000
Type of Family	-1.99690	0.46053	-4.336	0.000
Family Size	3.69235	0.31215	11.829	0.000
Year of Stay	1.42040	0.28687	4.951	0.000

F (10. 159) = 32.48, p = 0.000, which is less than 0.05, significant level, which shows that the combination of all ten independent variables has a significant relationship with the dependent variable, i.e., risk towards landslide. For predicting the risk towards landslides, family size (3.6) is the strongest influencing factor which predicts the dependent variable of risk towards landslides, which has a high size, whereas the age factor influences only 0.03 with a low positive effect. Marital status, type of house, and type of family have a negative effect on the risk towards landslide. Age (0.03), Gender (1.39), Education (0.62), Occupation (0.24), Monthly Income (1.00), Marital Status (-0.67), Type of House (-1.00), Type of Family (-1.99), Family Size (3.69) and Year of Stay (1.42).

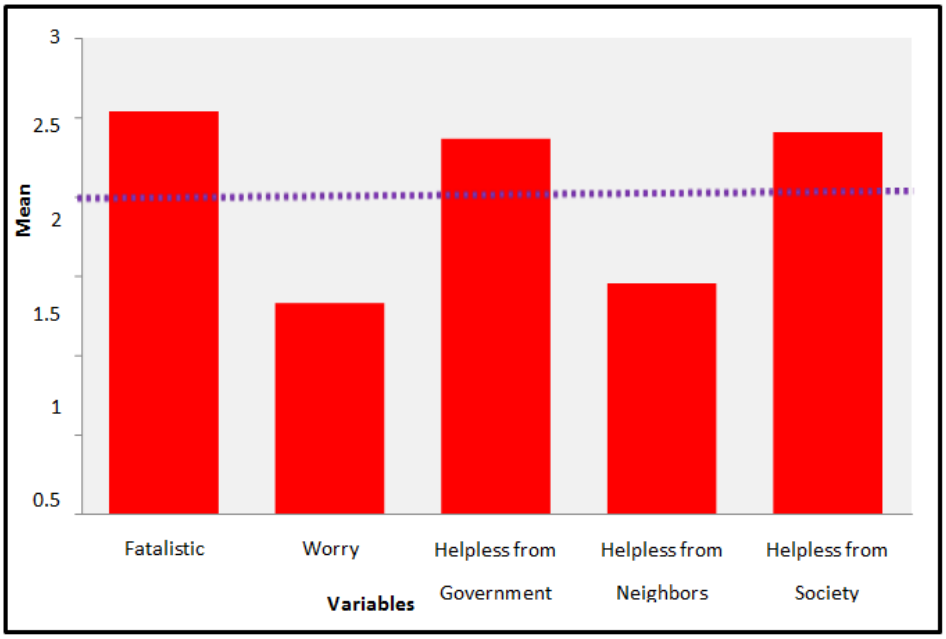
The Multiple regression equation for the risk towards landslide (YRisk)
YRisk = 4.59 + 0.03 (Age) + 1.39 (Gender) + 0.62 (Education) + 0.24 (Occupation) +
1.00 (Monthly Income) – 0.67 (Marital Status) – 1.00 (Type of House) – 1.99 (Family Type) + 3.69 (Family Size) + 1.42 (Year of Stay) + Error
Vulnerability towards landslide

Perception of Vulnerability landslide consists of five variables which are Fatalistic, worry of landslide, Helplessness from Neighbor, Helplessness from Government and Helplessness from Society. These variables under vulnerability are taken from different literature based on perceptions of landslides. Each variable has been measured using a three-point likert scale with an average of 1.5.
Descriptive for Vulnerability towards landslide

Table: 5.21
Descriptive Statistics – Vulnerability towards Landslide

Variables	Mean	SD	Count
Fatalistic	2.535	0.715	170
Worry	1.329	0.623	170
Helpless from Government	2.365	0.849	170
Helpless from Neighbors	1.453	0.815	170
Helpless from Society	2.406	0.956	170
Vulnerability	8.888	1.975	170

Figure 5.2
Mean Values – Vulnerability towards Landslide



From Table 5.22, it is found that vulnerability towards landslides is higher in the case of the variable "fatalistic" (M = 2.535) followed by "helpless from society" (M = 2.406), whereas the vulnerability towards landslides has a low mean for the variable "worry" (M = 1.329) as compared to other variables. It also inferred from the above table that the variables fatalistic, helpless from government and society have above the average level, whereas helpless from neighbors and worry have below the average level shown in Figure 5.2, where the blue dashed line indicates the average mean. The overall mean score of the vulnerability towards landslide is 8.88 which is 60 percent. This shows that the respondent's vulnerability towards landslides is above 60 percent.

Gender – Vulnerability towards landslide
Ho: There is no significant difference between Male and Female on the Vulnerability towards landslide.
H1: There is significant difference between Male and Female on the Vulnerability towards landslide.

Table: 5.22
Independent Samples t-Test – Vulnerability towards Landslide

T	df	p Value	95.0% Confidence Interval		Estimated Mean	
			Lower	Upper	Female	Male
2.3037	168	0.0224	0.1001	1.2998	9.3	8.6

An independent-samples t-test has been conducted to compare the significant variation between the male and female respondents with respect to the vulnerability towards landslides in the Nilgiri district. The test shows that the null hypothesis has been rejected due to the low alpha value (<0.05). The mean score of female respondents (Mean = 9.3) is higher than the male respondents (Mean = 8.6) shown in Table 5.23. This shows that the female respondents feel more vulnerable towards landslides than the male respondents. Hence, it is concluded that there is a statistically significant variation between the male and female respondents with respect to the vulnerable towards landslides.

Type of Family – Risk towards landslide

Ho: There is no significant difference between types of family on the vulnerability towards landslide.

H1: There is significant difference between types of family on the vulnerability towards landslide.

Table: 5.23
Independent Samples t-Test – Vulnerability towards Landslide

T	df	p Value	95.0% Confidence Interval		Estimated Mean	
			Lower	Upper	Joint Family	Nuclear Family
-0.965	168	0.335	-1.024	0.351	8.803	9.139

The significant difference between the types of family of the respondents in terms of landslide vulnerability has been compared using an independent-samples t- test. As the *P* value is not less than the Sig. Value (0.05), which is 0.335, our Null Hypothesis has not been rejected. The mean value of vulnerability towards landslides for nuclear families is 9.139, which is higher than the respondents from joint families (M = 8.803) has been indicated in Table 5.24. This suggests that there is no statistically significant difference in the perception of landslide vulnerability between people living in nuclear families and joint families.

Analysis of Variance

Education – Vulnerability towards landslide

Ho: There is no significant difference between education on the vulnerability towards landslide.

H1: There is significant difference between education on the vulnerability towards landslide.

Table: 5.24
One Way ANOVA – Vulnerability towards Landslide

	df	Sum of Squares	Mean Squares	F	Pr(>F)
Education	3	124.627	41.542	12.908	0.000
Residuals	166	534.250	3.218	NA	NA

A one-way between-groups analysis of variance (ANOVA) has been conducted to find a significant difference between the education of the respondents and Vulnerability towards landslide.

From Table 5.25, the null hypothesis has been rejected due to the *P* value (0.000), which is less than the Sig. Value (0.05). It suggests that the interviewee's education has a significant impact on landslide vulnerability, F (3, 166) = 12.908, p<0.05. Tukey's HSD reveals no significant difference among primary and illiterate participants (p = 0.997; >0.05). It also shows that there is a significant difference between illiterate and higher (p = 0.014; < 0.05), primary and higher education (p = 0.005; < 0.05), secondary and higher education (p = 0.000; < 0.05), secondary and illiterate (p = 0.003; < 0.05) and secondary and primary (p = 0.002; < 0.05) shown in Table 5.26. The maximum variation among the groups of respondents whose qualification is Secondary and Higher (Difference of mean is 2.773).

CONCLUSION

The study has more male participants than their counterparts with age group of 45 to 65 years of age group because they have very good experience on the landslide and they might have very good exposures on landslides. Most of the respondents are having illiterate and primary education so the most of the samples are working in agricultural and animal husbandry which makes them to earn less than 5000 rupees. Most of the samples are married and staying in joint family in pucca houses. The majority sample's size of their family is 4 to 5 members and staying for more than 25 years. The study has performed with most vulnerable group with high experience from the society.

It has concluded from the descriptive that they have risk perception of occurrence of landslide is more at the residence as well as workplace and they also feel that landslide is threaten their livelihood and financial status so they feel they might lose their control. Female respondents feel more risk towards landslide than male respondents because of not exposure to other people and staying in the house for most part of their life and thinking about past landslide which makes them more risk.

Age, gender and type of house predict has positive effect which predict vulnerability towards landslide whereas marital status and family size also predict vulnerability towards landslide but with negative effect. Type of house has high influencing factor for predicting vulnerability due to pucca strong house the may feel not vulnerable as compared to those who are staying in semi pacca or kacha house. Gender also second most influencing factor because female feels more vulnerable than male who are going out and contacting with so many people whereas female have to stay inside house for most of the time.

It has concluded from the descriptive that one of the mitigation is to relocate and accept inconvenience during the landslide or after the landslide but with the financial help from government. They are very much interest to seek information or alert from government on landslide to make their own mitigation plan.

REFERENCES

1. Achour, Y., Boumezbeur, A., Hadji, R., Chouabbi, A., Cavaleiro, V., & Bendaoud, E. A. (2017). Landslide Susceptibility Mapping using Analytic Hierarchy Process and Information Value Methods Along a Highway Road Section in Constantine, Algeria. Arabian Journal of Geosciences, 10(8), 194.
2. Adger,W.N.(2006).Vulnerability. Global Environmental Change, 16(3), 268 281.
3. Aditian, A., Kubota, T., & Shinohara, Y. (2018). Comparison of GIS-based Landslide Susceptibility Models using Frequency Ratio, Logistic Regression, and Artificial Neural Network in a Tertiary Region of Ambon, Indonesia. Geomorphology, 318, 101-111.
4. Beguería, S., & Lorente, A. (2002). Landslide hazard mapping by multivariate statistics: comparison of methods and case study in the Spanish Pyrenees.
5. BMTPC (2003) Landslide Hazard Zonation Atlas of India, Published by Building Materials and Technology Promotion Council. Government of India and Anna University, Chennai, p 12.
6. Brabb, E. E. (1985). Innovative Approaches to Landslide Hazard and Risk Mapping. In International Landslide Symposium Proceedings, Toronto, Canada (Vol. 1, pp. 17-22).