

**HOUSEHOLD DISASTER PREPAREDNESS AND ASSOCIATED FACTORS IN
THE ECOLOGICALLY SENSITIVE ZONES OF WAYANAD DISTRICT,
KERALA**

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**Dissertation submitted in partial fulfilment of the requirements for the award of the
degree of Master of Public Health**



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“So surely with hardship comes ease” (Q 94:5)

DEAR PAPPA, I WILL MISS YOU TILL I SEE YOU AGAIN!

DECLARATION

I hereby declare that this dissertation titled “**Household Disaster Preparedness and Associated Factors in the Ecologically Sensitive Zones of Wayanad District, Kerala**” is the bona fide record of my original research. It has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



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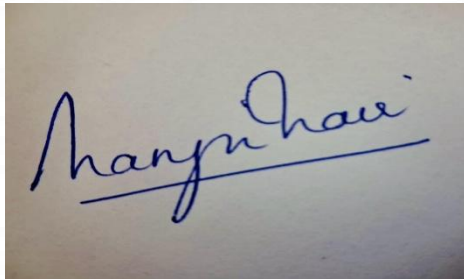
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India -695011

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CERTIFICATE

Certified that the dissertation titled “Household Disaster Preparedness and Associated Factors in the Ecologically Sensitive Zones of Wayanad District, Kerala” is a record of the research work undertaken by Dr. Reshma N Babu, in partial fulfilment of the requirements for the award of the degree of “Master of Public Health” under my guidance and supervision.

A photograph of a handwritten signature in blue ink on a light-colored surface. The signature reads "Manju R Nair" in a cursive script, with a horizontal line drawn underneath the name.

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GLOSSARY OF ABBREVIATIONS

APL	Above Poverty Line
BPL	Below Poverty Line
CI	Confidence Interval
DM	Disaster Management
DRR	Disaster Risk Reduction
ESA	Ecologically Sensitive Area
ESZ	Ecologically Sensitive Zone
GCAA	Global Climate Adaptation Agenda
HIPM	Holistic Individual Preparedness Model
IEC	Information, Education and Communication
INR	Indian Rupee
ISRO	Indian Space Research Organisation
ODK	Open Data Kit
UNDDR	United Nations Office for Disaster Risk Reduction (formerly <i>UNISDR</i>)
UNFCC	United Nations Framework Convention on Climate Change
UNESCO	United Nations Educational, Scientific and Cultural Organization
WHO	World Health Organization
WGEEP	Western Ghats Ecology Expert Panel

ABSTRACT

Introduction: Kerala is one of the Indian states highly vulnerable to natural disasters. Kerala has witnessed a series of catastrophic landslides in the past two decades. This study aimed to assess household disaster preparedness in the ecologically sensitive areas of Wayanad district, which includes the sensitive zones of the Western Ghats, and to understand how community participation and socio-economic factors influence disaster preparedness for landslides.

Methods: A community-based cross-sectional survey was conducted among the residents of ecologically sensitive areas of Wayanad District. The study was carried out in ten wards of three panchayats, and a multistage cluster sampling was used to obtain a sample size of 371 households. Data was collected using a structured interview schedule from January to March 2025. Household and individual Preparedness for landslides was assessed using a questionnaire based on the tool developed by (Rahman et al., 2024) using the holistic individual preparedness model

Results: The overall HIPM score of the ecologically sensitive areas of Wayanad district was found to be $0.46 (\pm 0.13)$ on a scale of zero to one, which indicates under preparedness even after repeated disasters in the area. Overall landslide disaster preparedness was significantly associated with sociodemographic and risk reduction factors. Community participation and awareness of disaster risk reduction initiatives (DRR), prior experience of landslides, and household characteristics like residing in pucca houses had significantly higher landslide disaster preparedness. People from the older age groups were less prepared than the younger adults, and the unemployed had lower preparedness compared to groups like farmers.

Conclusion: The findings highlight the importance of focusing on the most vulnerable socioeconomic and demographic groups, encouraging community engagement, and providing hands-on training on landslide disaster risk reduction to improve household preparedness and prevent loss of human lives in this ecologically sensitive area.

CHAPTER 1

INTRODUCTION

1.1 Background

India is the home for the world's highest mountain chain on earth – the Himalayas formed by the Indian and Eurasian plate. The continuous stress caused due to the northern movement of Indian plate towards China, on the rocks make them weak and prone to landslides and earthquake. In India, landslides are one of the major hydro-geological hazards affecting large parts of the country, especially in the Himalaya, the northeastern hill ranges, the Western Ghats, the Nilgiris, the Eastern Ghats and the Vindhyas. A rough estimate of landslide losses show that annually 500 people lose their lives due to landslide damages and economic losses are nearly 4 billion INR (Tangheroni, 2020). In India, about 0.42 million sq. km or 12.6% of land area, excluding snow covered area, is prone to landslide hazard. Out of this, 0.18 million sq. km falls in North East Himalaya, including Darjeeling and Sikkim Himalaya; 0.14 million sq. km falls in North West Himalaya (Uttarakhand, Himachal Pradesh and Jammu & Kashmir); 0.09 million sq. km in Western Ghats and Konkan hills (Tamil Nadu, Kerala, Karnataka, Goa and Maharashtra) and 0.01 million sq. km in Eastern Ghats of Aruku area in Andhra Pradesh (Sivadas et al, 2019). Kerala is one of the Indian states highly vulnerable to natural disasters. It consists of a 590 km of sea coast and with a steep gradient along the slopes of the Western Ghats. What makes Kerala more vulnerable to material and human losses is its densely populated nature (860 persons per square kilometres) (Post-Disaster Needs Assessment - Kerala | United Nations Development Programme, 2018.). Though Kerala is rich in biodiversity with abundant resources, in the recent years the state has been facing deterioration resulting in fluctuations in rainfall pattern and unprecedented heat waves.

Kerala has witnessed a series of catastrophes due to landslides in the past two decades. Between June 1 and August 18, 2018, Kerala experienced its worst floods since 1924 which triggered numerous landslides. Nearly 341 landslides were reported from 10 districts which affected 5.4 million people and killed nearly 433 people. The Government reports that 1,259 out of 1,664 villages spread across the state's 14 districts were affected. Extensive damages were caused to crops, livestock and various forms of infrastructures (Post-Disaster Needs Assessment - Kerala | United Nations Development Programme, 2018). Wayand district of Kerala holds a sensational record of landslides and the recent Mundakkai landslide was the worst of all, killing more than 400 people and dislocating many. Located at the southern tip of the Deccan Plateau Wayanad district of Kerala is a part of the Western Ghats and the district's terrain is dominated by the plateau topography and ridges of the Western Ghats. It is a multi-hazard prone district and is classified as a Zone III (Moderate Risk) area for earthquakes (DM Plan 2021).

Community based preparedness emphasizes collective community action and the internal mobilization of available resources, so that the community could be self-reliant. Being the first responders to any type of disasters, community members should have adequate awareness as it is important for successfully running Community based disaster preparedness (Kapucu, 2008) (DM Plan 2021).

1.2 Rationale

Wayand being a home for major parts of western ghats, many villages have been designated as ecologically sensitive vulnerable to landslides. Its high time to shift the focus of disaster mitigation researches from reactive to proactive behaviours. The series of frequently occurring, massive landslides and associated damages reinforces urgent

need for effective disaster preparedness and mitigation strategies so as to face the unique challenges of this region.

1.3 Research questions

1. What is the level of disaster preparedness among people in the ecologically sensitive zones of Wayanad district?
2. What are the factors associated with the disaster preparedness in the ecologically sensitive zones of Wayanad district?

1.4 Objectives

1. To assess household disaster preparedness in ecologically sensitive areas of Wayanad district.
2. To understand how community participation affects disaster preparedness in ecologically sensitive areas of Wayanad.
3. To understand the influence of socio-economic factors on disaster preparedness.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Climate changes and extreme weather events

Climate changes and extreme weather events are one of the major challenges that the world has been facing for a long time. The increase in the destruction of natural habitats for the expansion of human activities and the emission of greenhouse gases into the atmosphere has accelerated the intensity and frequency of environmental events. The United Nations Framework Convention on Climate Change (UNFCCC) defines Global Anthropogenic Climate Change (GACC) as:

‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods’.

Globally, millions of people are adversely affected by losing their lives and livelihoods due to natural and man-made disasters caused by various kinds of hazards.

2.2 Natural hazards

According to the United Nations Office for Disaster Risk Reduction, a Hazard is defined as a process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.

Though natural hazards do not directly affect human lives they carry the potential to cause disasters and therefore carry the risk of posing damage at any point in time.

2.3 Disaster

According to UNDDR, a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts is defined as a disaster. The aftermath of disasters is not just limited to physical but also economic posing a huge challenge for countries, especially for the ones that are developing and fall under low income. Low-income countries are more adversely affected than high-income countries during disasters not just in the phase of recovery and rehabilitation but also in prevention and response due to a lack of infrastructure, housing plans and resource constraints. It is also interesting to note that Asia is one of the most susceptible regions to natural disasters. Since 2000, 1.2 billion people have been exposed to hydrometeorological hazards alone through 1215 disaster events and climate change is believed to alter weather patterns on the regional scale, giving rise to extreme weather events (Hashim and Hashim, 2016) Disaster Mitigation research has been very active in recent years nevertheless most of the studies are done in the area of reactive behaviours especially planning, policy-making and emergency services to manage the repercussions of the disasters. Little is known and done on proactive behaviours. Though prevention is better than cure, Disaster Preparedness and education are largely an unexplored area compared to other mitigation measures. Disaster Preparedness being the primary concept in disaster management serves as one of the key factors in reducing casualties of a disaster.

2.4 Disaster preparedness

Disaster preparedness includes all aspects covered under prevention, capacity building and mitigation which are aimed at minimizing loss of life, disruption of critical services, and damage when the disaster occurs(Kerala State Disaster Management Plan 2016.pdf, n.d.) .Community preparedness acts as extra coverage to disaster preparedness and is a process of bringing people together within the same community to enable them to collectively address common disaster risk and to pursue common disaster preparedness.

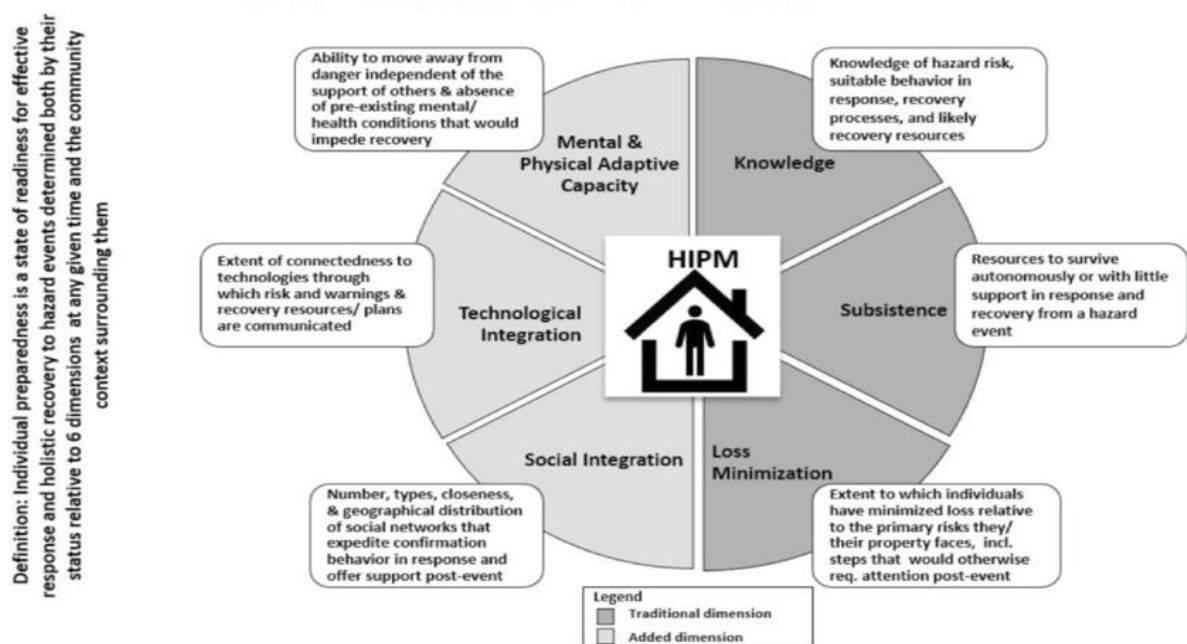
2.5 Individual and household preparedness

Disaster preparedness and public awareness are inseparable as awareness lay the foundation to build preparedness to strengthen resilience. Studies that analysed floods and tropical cyclones in relation to emergency preparedness have shown that despite of having knowledge about the severity of hazards and successfully implemented campaigns many of the households were inadequately prepared for predictable and regularly occurring hazards.(Kapucu, 2008).Many studies suggest that adequate Individual and Household preparedness can help in minimising the potential impacts of hazards on individual and property. (Kapucu, 2008; Kusenbach et al., 2010).Interestingly , Individual and household preparedness is also found to be linked with the ability of communities to respond to such adverse situations effectively.

2.6 Holistic Individual Preparedness Model

The HIPM model is a conceptual model (Nojang and Jensen, 2020) used to assess disaster preparedness. This is a versatile model capable of capturing various aspects of preparedness in a multidimensional way. Unlike the current frameworks used in disaster researches focusing on the physical aspects of preparedness, HIPM model adopts a comprehensive

approach by incorporating psychological and social aspects of preparedness. This helps in mirroring the true nature of preparedness. According, to this framework, ‘individual holistic preparedness’ denotes ‘a state of preparation for an effective response and comprehensive recuperation from hazard incidents, which is determined by the surrounding community environment and the current condition of six interconnected components’ (Jensen 2014). This includes knowledge, subsistence, loss minimisation, social integration, technological integration, and mental and physical adaptive capacity.



Holistic individual preparedness model (HIPM) (Jensen 2014).

2.7 Disaster preparedness and community participation

Community participation is crucial in developing community preparedness and has grown in prominence in disaster mitigation worldwide. Even though Disaster Mitigation can occur at various scales, it is not limited to individual levels. Disaster mitigation strategies become fully effective only when community participation is maximum. Several recent studies have focused on the importance of enhancing community participation in disaster mitigation measures as it helps in sharing resources and expertise, developing physical and mental preparedness, risk assessment, planning, and transmission of information

resulting in rapid and effective responses. (Ali and George, 2022). In the disaster management domain, the World Health Organisation (WHO) describes community participation as

Community participation is the active involvement of people from communities preparing for, or reacting to, disasters. True participation means the involvement of the people concerned in analysis, decision-making, planning, and programme implementation, as well as in all the activities, from search and rescue to reconstruction, that people affected by disasters undertake spontaneously without the involvement of external agencies.

Occurrence of natural disasters cannot be ended but the frequency and intensity can be decreased. In simple words, we can prepare ourselves to face the challenges better.

Improving Disaster Preparedness, prevention and recovery among communities in Ecologically sensitive areas is not just about analysing the Socio-economic factors responsible for disaster risk reduction but is also about understanding the role of Previous experience from similar events, social bonding that helps in resource sharing and reducing the sufferings of marginalised population, perception of trust, neighbourhood relationships and community involvement in social events. Studies done on social participation and factors driving communities to be actively involved in social events to analyse the overall effect on disaster preparedness are scant. The case study on Social Participation and Disaster Risk reduction behaviours in Tsunami-risk areas of Thailand jointly looked at the combined effects and found that social participation has a multifactorial influence and can be enhanced with a combination of disaster risk reduction behaviours (Witvorapong et al., 2013).

Also in terms of social participation, Individuals who participate in village-based activities were 5.2% more likely to undertake all three risk reduction actions compared to those not engaging in community activities. (Witvorapong et al., 2013).

Another case study was done among the residents of Kochi following the Kerala floods of 2018 and 2019 to analyse community participation's impact on disaster mitigation measures it was seen that participants who were active in community events were 23 percent more likely to adopt all disaster mitigation measures than the those who did not. In terms of education, those with high education levels had a direct correlation with better disaster mitigation measures (Ali and George, 2022).

2.8 Disaster preparedness and socio-economic factors

Numerous disaster researches carried out in the field of disaster mitigation have already proven the importance of disaster preparedness and the role of community participation in enhancing disaster resilience (Ali and George, 2022). Earlier studies have shown that the role of socioeconomic factors such as age, gender, education, income, and marital status are associated with Disaster risk reduction (Paton, 2019; Russell et al., 1995). Literature suggests that Individual and household characteristics, gender, marital status, income level, previous disaster experiences, losing someone due to disaster, having a differently-abled member, house ownership, and house material influence disaster preparedness (Tohan et al. 2024). Also, individuals with pucca housing are better equipped than those with unsafe housing (kacha). Concerning flood preparedness in a study, gender, age, occupation, monthly income, multiple sources of income, and house type were all significant determinants(Rahman et al., 2024). Women are found to have stronger preparedness levels due to greater risk perception and social networking (Fothergill, 1996; Witvorapong et al., 2015). In contrary to this, females were less prepared for flooding than males in the field research conducted in a flood preparedness study in Bangladesh (Rahman et al., 2024).

Therefore, to enhance social participation so as to improve community resilience studies that look into the dependencies of socio economic factors and its effect on other variables aiding risk reduction are essential.

2.9 Landslides in India

Among Natural Disasters Landslides are one of the major hydro-geological hazards, that are recurring in many parts of the Asian continent including India. A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. The Himalayas, hill ranges of the north-east, western ghats, eastern ghats and vindhyas in India are susceptible to landslides.

Probability of Landslides occurrence in India (Tangheroni, 2020)

Region	Incidences of landslides
Himalaya	High to very high
North-eastern Hills	High
Western Ghats and the Nilgiris	Medium to high
Vindhyas	Low

Major Landslides in India (Tangheroni, 2020)

SL NO	MAJOR LANDSLIDES IN INDIA (1968- 2013)
1	The Darjeeling floods of 1968 destroyed vast areas of Sikkim and West Bengal by unleashing spate of landslides, causing considerable death and destruction
2	In Nilgiri hills, during October–November 1978, 90 people died due to landslides

3	The Malpa rock avalanche tragedy of 18 August 1998 killed 220 people and wiped out an entire village of Malpa on right bank of river Kali in Kumaun Himalaya, Uttarakhand
4	The Amboori landslide of 9 November 2001 in the state of Kerala killed 23 people.
5	The Varunavat landslide of Uttarkashi initiated on 23 September 2013 and lasted for 15 days endangered Uttarkashi township.
6	The Konkan landslide (2005) in Konkan Plain of Maharashtra killed 190 people.
7	Landslides in Bhavi village of Ghanvi in Himachal Pradesh (2007) triggered from cloudburst, killed 52 people.

2.10 Western ghats and landslides

Landslides have grown in prominence as a typical monsoon calamity in the western ghats. Western Ghats is a global biodiversity hotspot declared a world heritage site in July 2012 by the United Nations Education, Scientific and Cultural Organisation (UNESCO). The potential for landslides is very high during the rainy season and in areas with high precipitation. As the southern part of the western ghats is covered by Kerala a multi hazard state, destructive landslides have turned out to be a monsoon phenomenon there.

2.11 Kerala landslides

In the past two decades, Kerala lived through numerous disastrous landslides including the Puthumala landslides in Wayanad (2019), the Kottayam and Idukki landslides (2019), the Kavalapara landslide in Malappuram District (2019) and the most recent Mundakkai

Landslides in Wayanad district (2024) killing more than 450 people. Landslides alone cause billions of dollars in damage and reconstruction of infrastructure and thousands of deaths occur every year worldwide.

In addition to the economic impacts of such disasters, displacement also arises as an issue. People are relocated before, during or after a disaster causing them to forcefully adapt, adjust and cope with a new environment paving the way to stress disorders in future. Therefore, Landslide preparedness is the key to unlocking the fear among the vulnerable communities in areas susceptible to landslides and helping them to prepare better for any adverse conditions.

2.12 Landslide profile of Wayanad

Wayanad covers a total geographical area of 2131 km² which includes the southern tip of the Deccan plateau and the southern part of the western ghats that contributes to its unique ecology with rich flora and fauna.

In 2011, the Western Ghats Expert Ecology Panel (WGEEP) was formed in 2010 by the centre to study the impact of population pressure, climate change, and development activities on the Western Ghats chaired by ecologist Madhav Gadgil submitted the Gadgil report, which identified the region as Ecologically Sensitive Area (ESA) and classified 64% of the Western Ghats into three Ecologically Sensitive Zones (ESZ). A year later in 2012 another committee to study the WGEEP report, a High-Level Working Group was assigned by the Union Environment Ministry under former ISRO chief Dr K Kasturirangan which recommended that only 37 % of western ghats belonged to Ecologically Sensitive Areas. The conflict between development and Environmental protection is a never - ending story, nevertheless finding a healthy balance is the key.

Following the series of Landslides in the Wayanad district of Kerala the Government of India issued a draft on July 31st 2024 designating about 56,800 km² of the Western Ghats across six states as Ecologically Sensitive Areas (ESA). The 13 villages in Wayanad that are included in the list are Periya, Thirunelli, Thondernad, Thrissilery, Kidanganad and Noolpuzha in Mananthavady Taluk and Achooranam, Chundel, Kottappadi, Kunnathidavaka, Pozhuthana, Thariyod and Vellarimala in Vythiri Taluk.

2.13 Quantitative studies in disaster mitigation

Administering a quantitative approach in analysing various measures of disaster preparedness among the residents of ecologically sensitive areas of Wayanad can help in providing a solid foundation in identifying the level of preparedness, understanding the effectiveness of current mitigation strategies and providing insights on the scope and areas for improvement. A quantitative research approach can help throw light on data-driven insights that can help identify certain trends or patterns which may stay hidden when a qualitative method is adopted. the quantitative research approach in disaster preparedness analysis helps in providing statistical evidence to support various aspects of disaster risk reduction policies, and to evaluate interventions, thereby designing and redesigning present strategies and coming up with better ones in future. This also provides a scope for accurate predictions and better proactive planning so as to mitigate disasters.

CHAPTER 3

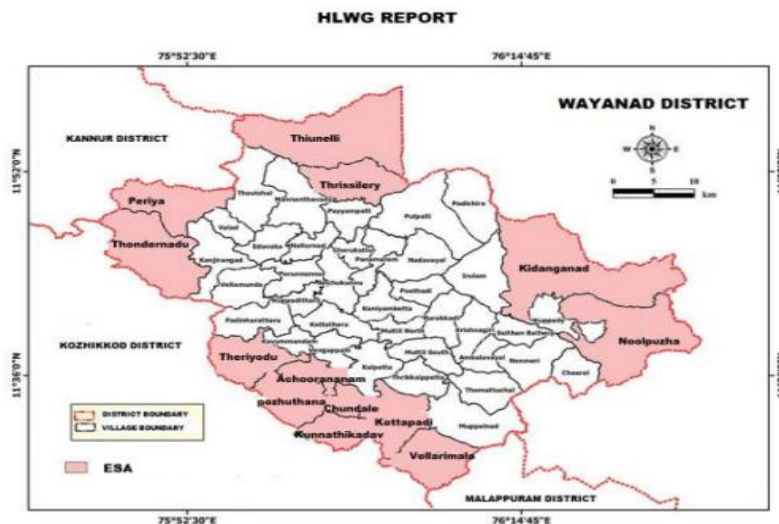
METHODOLOGY

3.1 Study design:

A community based cross-sectional study to assess the disaster preparedness and to understand the associated factors among the residents of ecologically sensitive areas of Wayanad district, Kerala.

3.2 Study setting

The study was carried out in ten wards of Meppadi, Vythiri and Pozhuthana gramapanchayath.



3.3 Description of the study setting:

Following the series of Landslides in the Wayanad district of Kerala the Government of India issued a draft on July 31st 2024 designating about 56,800 km square of the Western Ghats across six states as Ecologically Sensitive Areas (ESA). The 13 villages in Wayanad that are included in the list are Periya, Thirunelli, Thondernad, Thrissilery,

Kidanganad and Noolpuzha in Mananthavady Taluk and Achooranam, Chundel, Kottappadi, Kunnathidavaka, Pozhuthana, Thariyod and Vellarimala in Vythiri Taluk. Out of these, three ecologically sensitive gramapanchayaths – Meppadi, Vythiri and Pozhuthana are chosen.

3.4 Study participants

The study participants include adults aged eighteen years or above capable of taking household decision and permanent residents, of the current location living there for at least one year.

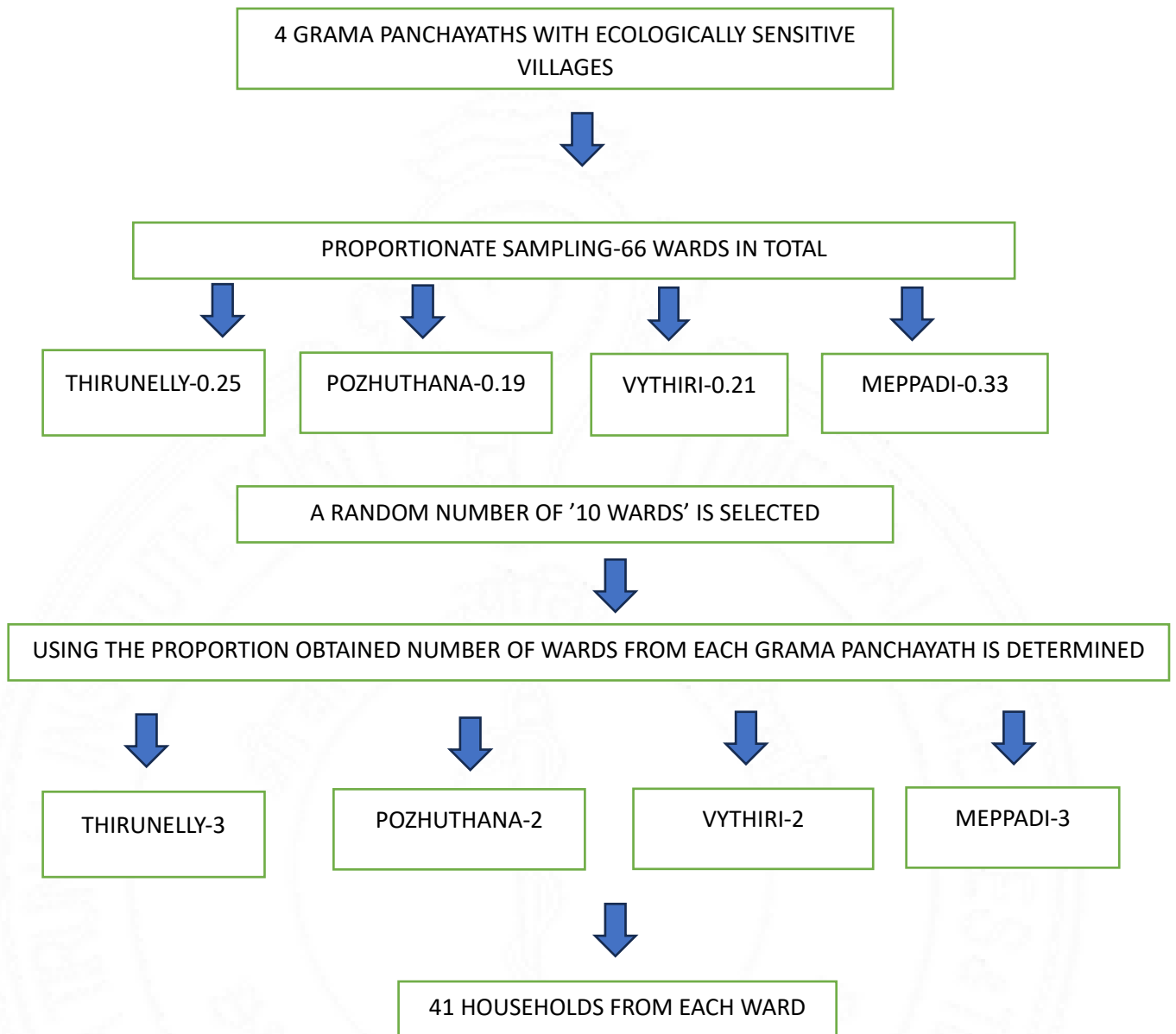
3.5 Sample size

Sample size was calculated using OpenEpi software version 3.0.1. The estimated sample size is 371, with an anticipated frequency of 28% (*Rahman et al., 2024*). with a CI of 95%, design effect of 1.5 and a relative precision of 20%. With a non-response rate of 10%, Sample size is estimated to be 412.

3.6 Sampling strategy

Multistage cluster sampling will be used as a sampling strategy. From the three grama panchayaths that includes ecologically sensitive villages through proportionate sampling to reflect the composition of the overall population, proportion of wards from each grama panchayath is determined. Then a random number of ten wards were chosen out of the total wards. Using the proportion obtained for each ward the number of wards required for each grama panchayath was calculated.

Figure 1: Sampling strategy



Though the initially planned sampling strategy had four grama panchayaths in total, Thirunnelly grama panchayath was dropped later due to the warnings about the presence of three tigers known to attack humans and domestic animals in the neighbouring regions of Manathavady. Panchayat leaders were apprehensive and were not supportive of the data collection process in this area. Therefore, they were replaced by wards from Meppadi, Pozhuthana, and Vythiri Grama panchayaths to attain the required sample size.

3.7 Participant selection

Inclusion Criteria

1. Permanent residents of the current location who have lived there for at least one year.
2. Respondent should be eighteen years or above, capable of taking household decisions and willing to participate in the study.

Exclusion Criteria

1. Institutional residences

3.8 Data collection techniques

A structured interview schedule was used to collect data from the participants. The duration of the study was from 15th January 2025 to 14th March 2025. The interview was conducted in Malayalam. The interview schedule consisted of demographic details, risk perception of landslides, dimensions of disaster preparedness - disaster knowledge, subsistence, loss minimisation, technological integrity, social integrity, adaptive capacity and community participation. The interview was taken followed after obtaining the written informed consent of the study participants.

3.9 Data collection tool

A structured interview schedule in English and Malayalam was used to collect data. The questionnaire had four sections:

Section 1: Sociodemographic information

Basic demographic data, including age, gender, marital status, household composition, education level, occupation, household income, housing ownership, and socioeconomic status.

Section 2: Risk perception

Perception of landslide risks in their area, past experiences, perceived causes of landslides, potential consequences and the reliability of various information sources for landslide warnings.

Section 3: Household disaster preparedness- a comprehensive tool developed to assess disaster preparedness in the flood prone areas of Bangladesh was adapted to prepare the questionnaire (Rahman et al., 2024).

3.1. Landslide knowledge: Knowledge of emergency actions and shelters.

3.2. Subsistence: Availability of emergency savings, kits, food storage, and cash.

3.3. Loss minimisation: House reinforcement, insurance, document security, and livestock plans.

3.4. Technological integration: Access to warning systems, communication devices, and internet resources.

3.5. Adaptive capacity: Mental and physical readiness for landslides and participation in preparedness drills.

Section 4: Community participation

4.1. Social integration: Access to emergency contacts and community assistance.

4.2. Community engagement: Participation in preparedness initiatives, awareness of disaster risk reduction channels and communication with local authorities

3.10. Data storage

The interview schedules used for data collection are kept safely and is accessible only to the principal investigator. The soft copy of the data collected is encrypted and saved to the personal laptop of the principal investigator.

3.11. Data analysis

The data collected by the principal investigator was entered in ODK and exported to Microsoft excel. Using IBM SPSS, descriptive analysis was done to understand the patterns of various sociodemographic characters and distributions of risk perception.

Overall HIPM score is the outcome variable. The dataset was further explored using chi-square tests and fisher's exact tests to understand the associations between the variables.

Variables with significant associations were later used to do multivariable analysis.

Holistic individual preparedness model was adopted to calculate the scores of overall preparedness.

3.12. Ethical consideration

The Institutional Ethics Committee of Sree Chitra Tirunal Institute for Medical Sciences and Technology had reviewed the study proposal and gave clearance to conduct the study (IEC/2334). Informed consent for participating in the study was obtained from the study participant. The participant had the freedom to accept or refuse to participate, and could have withdrawn participation at any time of the study without any explanation and consequence.

CHAPTER 4

RESULTS

4.1 DESCRIPTIVE ANALYSIS

This chapter presents the results of the analysis of data collected through the quantitative survey. The descriptive analysis is presented in four sections as follows:

Section A: Describes the socio-demographic characteristics of the respondents from the households

Section B: Descriptives of

- a) extreme weather-related experiences and perceptions
- b) perceived causes of landslides
- c) sources of information on disasters
- d) trusted sources of information on disasters.

Section C: Describes the variables related to community engagement and disaster preparedness.

Section D: HIPM Scores for Household Disaster Preparedness

4.1.1 Section A

In this section, sociodemographic characteristics of the respondents from the households are presented.

Sociodemographic characteristics of the households

Data collection was done through 371 household interviews from the Meppadi, Vythiri and Pozhuthana Grama panchayaths of Wayanad District which are situated in the ecologically sensitive zones.

The mean (SD) age of the participants was 50.94(12.73) years and more than half of the population (53.4 percent) belonged to the age group 45-64 years. Equal representation of male (49.9 percent) and female (50.1 percent) were found. Majority of the participants (81.7 percent) were married. More than forty percent (43.7 percent) of the households had 5 to 6 members and close to seventy percent (66.8 percent) of the households had a vulnerable members like child under 5 or pregnant women or old person above 60 years. Over one third of the participants (35.6 percent) were daily wage labourers and one of the respondents was unemployed including students and housewives. Nearly half of the participants completed at least high school and more than half of the households (59.3 percent) had members who completed graduation. Majority of the population (89.2 percent) lived in their own house. Nearly half of the population lived in pucca houses and less than ten percent in kaccha houses. More than half of the population owned BPL card (53.7 percent) and more than half of the population (56.1 percent) had a household per capita monthly income of Rs 1369 or less and belonged to class 5 according to the updated B. G. Prasad Socioeconomic Status Classification for the Year 2024.

Table 4.1: Summary of Sociodemographic Characteristics

Variable	Categories	Frequency (n)	Percentage (%)
Sex (N=371)	Female	186	50.1
	Male	185	49.9
Marital Status (N=371)	Married	303	81.7
	Divorced/Separated/Widowed	41	11
	Unmarried	27	7.3

Age Group (N=371)	45-64	198	53.4
	25-44	101	27.2
	65-79	63	17.0
	18-24	9	2.4
No. of household members (N=371)	5-6	162	43.7
	3-4	135	36.4
	1-2	45	12.1
	7 or more	29	7.8
Presence of vulnerable members* in the household (N=371)	Yes	248	66.8
	No	123	33.2
Occupation of the respondent(N=371)	Daily Wage labourers	132	35.6
	Unemployed	111	29.9
	Employed (Govt./Private)	55	14.8
	Self-Employed (Business, Farming, Tailoring, etc.)	42	11.3
	Other Miscellaneous	31	8.4
Occupation of the head of the Household(N=371)	Coolie/Daily Wages	167	45
	Self-Employed (Business, Farming, Tailoring, etc.)	57	15.4
	Employed (Govt./Private)	55	14.8
	Unemployed	31	8.4
	Others(Miscellaneous)	61	16.4
Educational Qualification of the respondant (N=371)	High School	182	49.1
	Primary Education	89	24.0
	Graduate and above	73	19.7
	No schooling	27	7.3
Highest Educational Qualification attained by any	Graduate and above	220	59.3

member of the household (N=371)			
	High School	122	32.9
	Primary Education	21	5.7
	No schooling	8	2.2
House Ownership (N=371)	Own house	331	89.2
	Rented	40	10.8
Ration Card (N=371)	BPL card	198	53.4
	APL card	173	46.6
Type of House (N=371)	Pucca	177	47.7
	Semi-Pucca	167	45.0
	Kaccha	27	7.3
Household per capita income (N=371) (Rs per month) 'Updated B. G. Prasad Socioeconomic Status Classification for the Year 2024'	Rs 1369 and below	208	56.1
	Rs 1369 – Rs 2738	74	19.9
	Rs 2739 – Rs 4564	39	10.5
	Rs 4565 - Rs 9129	37	10.0
	Rs 9130 and above	13	3.5

*Child under 5 or pregnant women or elderly above 60

4.1.2 Section B

a) Extreme weather conditions related experiences and perceptions

In this section participants responded to questions related to extreme weather conditions like landslides, heavy rainfall and flood to understand their experiences and perceptions. Questions related to the perceived risks, causes and sources of information on landslide disasters were also included. Majority of the participants (93 percent) felt that there was an increase in the rainfall frequency in the past five years. Half of the population (53.6 percent) had landslide experiences and the rest (46.4 percent) had no experience at all. Participants

from those households with landslide experiences, nearly three fourth (71 percent) had experienced landslides in the year 2024. More than half of the population (56 percent) believed that human activities contributed to disasters like landslides. More than half of the participants (51.5 percent) thought that the weather forecasting by the authorities was not adequate. Nearly half (48.2 percent) of the participants thought that the place they lived is unsafe from landslides. In addition to this, around 15 percent of the participants perceived that their place very unsafe from landslides.

Table 4.2: Extreme Weather Conditions -Related Experiences and Perceptions

Variable	Categories	Frequency (n)	Percentage (%)
Perception regarding increased rainfall frequency in the past 5 years (N=371)	Yes	345	93.0
	No	26	7.0
Landslide Experience (N=371)	With Experience	199	53.6
	No Experience	172	46.4
Year of landslide experience (N=371)	2024	143	71.9
	Before 2024	54	27.1
	2025	2	1.0
Perceived Role of Human Activities (N=371)	Yes	208	56.1
	No	163	43.9
Weather Forecast Accuracy (N=371)	Adequate	180	48.5
	Inadequate	151	40.7
	No Forecasting at All	40	10.8
Perceived Safety from Landslides (N=371)	Unsafe	179	48.2
	Safe	137	37
	Very Unsafe	55	14.8

b) Perceived Causes of Landslides

Majority of the participants (90 percent) believed that heavy rainfall was the main cause of landslides. Nearly one third (34.5 percent) perceived that the steep slope topography as the risk for the landslides. One fourth of the population felt that large scale constructions (27 percent) and unstable soil type were the causes for landslides.

Table 4.3: Perceived Causes of Landslides (Multiple responses)

Cause of Landslides	Responses (n)	Percent of Cases (%)
Heavy Rainfall	334	90.0
Steep Slope Topography	128	34.5
Large-Scale Constructions	100	27.0
Unstable Soil	89	24.0
Deforestation	81	21.8
Mining	52	14.0

c) Perceived impact due to landslides

Majority of the participants (92.5 percent) perceived the loss or damage of household as the biggest impact of landslides. More than half of the population (59.3 percent) also felt that loss or change in livelihood pattern as an anticipated impact of landslide. One third of the participants (37.5 percent) also chose disruption of movements as a perceived impact of landslides.

Table 4.4: Perceived Impact due to landslides (Multiple responses)

Perceived Impact	Responses (N)	Percent of Cases (%)
Loss or Damage of Household	343	92.5
Loss or change in livelihood Pattern	220	59.3
Disruption of Movements	139	37.5
Disruption of Services	118	31.8
Illness	84	22.6

d) Sources of Information on Disasters

Majority of the participants (89.2 percent) relied on electronic media to get landslide related information. Nearly half of the participants (47.8 percent) used social media for information on disasters. More than one third (44.6 percent) of the participants got information on disasters from other people, and close to one (28.9 percent) of them relied on government authorities for landslide information.

Table 4.5: Sources of Information on Disasters (Multiple responses)

Source of Information	Responses (N)	Percent of Cases (%)
Electronic Media	330	89.2
Social Media	177	47.8
People (family members, community members)	165	44.6
Government authorities	107	28.9
Internet	57	15.4
Print Media	28	7.6

e) Trusted Sources of Information on Disasters

Among the trusted sources of information, majority of the participants (85.4 percent) considered electronic media (TV, Radio etc) as the most trusted and nearly three fourths (73.2 percent) of the participants trusted the government authorities regarding information. Nearly half of the participants (50.4 percent) also cited their family and community members also as their trusted source of disaster information.

4.6. Trusted Sources of Information on Disasters (Multiple responses)

Trusted Source	Responses (N)	Percent of Cases (%)
Electronic Media	315	85.4
Authorities	270	73.2
People (family members, community members)	186	50.4
Print Media	71	19.2
Social Media	65	17.6
Internet	43	11.7

4.1.3 Section C

In this section participants were asked questions on community engagement for disaster risk reduction covering communication and awareness, frequency of communication with authorities and community participation.

a) Community Engagement and Disaster Preparedness

More than half (67.1 percent) of the participants had access to communication channels like Whatsapp, Facebook groups etc to share disaster related news/updates. Half of the participants (56.3 percent) were unaware of the community risk reduction initiatives undertaken in the community. Majority (94.1 percent) of the participants did not participate in any community risk reduction initiatives. More than two third (78.4 percent) of the participants were unaware of community groups arranging training sessions for risk reduction. Majority (83.6 percent) of the participants rarely communicated with the authorities regarding disaster risk reduction. However, two thirds (74.1 percent) of the participants had participated or were a part of general community programmes (not disaster related) like those arranged by self-help groups, residents association etc. in their locality.

Table 4.7: Community Engagement and Disaster Preparedness

Variable	Categories	Frequency (n)	Percentage (%)
A. Communication and Awareness			
Access to communication channels sharing disaster related news/updates	Yes	249	67.1
	No	122	32.9
Awareness regarding community risk reduction initiatives	No	209	56.3
	Yes	162	43.7
Participation in Risk Reduction Initiatives	No	349	94.1
	Yes	22	5.9
Awareness regarding community groups arranging Training Sessions for risk reduction	No	291	78.4
	Yes	80	21.6
B. Frequency of Communication with Authorities regarding risk reduction			
Communication Frequency	Rarely	310	83.6
	Occasionally	50	13.5
	Frequently	11	3.0
C. Community Participation			
Participation in general community Programs	Yes	275	74.1
	No	96	25.9

4.1.4 Section D

a) HIPM scores for Household Disaster Preparedness

The HIPM score had six dimensions related to Knowledge, Subsistence, Loss minimisation, Technological integration, Adaptive capacity and social integration. The average score for each dimension was calculated using the formula:
Average score of dimension = Total score in items / Total number of items

The overall Household Individual Preparedness Score (HIP score) was calculated by taking the average of the six dimension scores:

HIP score (HIPS)= (Knowledge score +Subsistence score + Loss minimisation score + Technological integration + Adaptive capacity+ Social integration) /6

The scores for each Dimension according to Holistic Individual Preparedness Model was calculated with their mean (SD) on a scale of zero to one.

Reliability analysis of the HIPM questionnaire

The internal consistency of the questionnaire used to measure the six dimensions of HIPM was analysed using Cronbach's alpha. The analysis included 27 items which was administered to 371 participants and the Cronbach's alpha was found to be 0.804 which indicated good reliability.

Table 4.8: Frequencies of responses on the six dimensions of HIPM

HIPM dimensions	Index	Response	Frequency (n)	Percent (%)
Knowledge	Landslide Experience	No	199	53.6
		Yes	172	46.4
	Landslide actions to be taken in an emergency	No	218	58.8
		Yes	153	41.2
	Know emergency contacts during Landslide	No	178	48.0
		Yes	193	52.0
	Knowledge of Shelter Location	No	167	45.0
		Yes	204	55.0

Subsistence	Emergency savings	No	327	88.1
		Yes	44	11.9
	Availability of emergency kit	No	312	84.1
		Yes	59	15.9
	Stocks food supply before monsoon	No	339	91.4
		Yes	32	8.6
Loss minimisation	Keeps cash at home for emergency use	No	321	86.5
		Yes	50	13.5
	Reinforcement of house done	No	291	78.4
		Yes	80	21.6
	Insurance for house & property	No	363	97.8
		Yes	8	2.2
	Uses Digilocker or similar facility	No	325	87.6
		Yes	46	12.4
	Safe storage of documents done	No	154	41.5
		Yes	217	58.5
Technological integration	Plans for moving livestock	No	234	63.1
		Yes	137	36.9
	Receives timely notification and warnings	No	226	60.9
		Yes	145	39.1
	Availability of devices to access disaster related information	No	28	7.5
		Yes	343	92.5
	Access to internet connectivity	No	101	27.2
		Yes	270	72.8
	Uses social media platform for updates and alerts.	No	134	36.1
		Yes	237	63.9
Adaptive capacity	Physically prepared to face a disaster	No	144	38.8
		Yes	227	61.2
	Mentally prepared to face a disaster	No	150	40.4
		Yes	221	59.6
	Household members are physically prepared to face a disaster	No	193	52.0
		Yes	178	48.0
	Household members are mentally prepared to face a disaster	No	190	51.2
		Yes	181	48.8
	Has an evacuation plan for the family during a disaster.	Yes	84	22.6
		No	287	77.4
Social integration	Contacts of relatives/neighbours to access/ share disaster related information during an emergency	No	77	20.8
		Yes	294	79.2

Experience of receiving goods/ services from neighbours	No	154	41.5
	Yes	217	58.5
Shares landslide information with the community	No	83	22.4
	Yes	288	77.6
Feels comfortable to share landslide related risks and preparedness plans	No	123	33.2
	Yes	248	66.8

The above table indicates that more than half of the respondents had prior experience of a landslide. Less than half of the respondents knew what actions to be taken during a landslide (41.2 percent) or had emergency savings (11.9 percent). Technological integration was strong, with only seven percent having no devices to access disaster-related information and less than one third (27.2 percent) had no internet connectivity. Nearly half of the population had not maintained emergency contacts to access or share information during an emergency. In the adaptive capacity domain, close to 97 percent had not participated in mock drills and more than three fourths did not have an evacuation plan for the family for a landslide disaster. In the loss minimisation domain, close to eighty percent of the participants had not reinforced their houses, only two percent had insured their home/property, only 12.4 percent used digital storage for documents and only slightly more than one third had plans to move livestock during a landslide disaster.

Domains of HIPM: The six dimensions include landslide **Knowledge**, which is a knowledge of emergency actions and shelter, **Subsistence** that includes availability of emergency savings, kits, food storage, and cash, **Loss minimisation** that includes house reinforcement, insurance, document security, and livestock evacuation plans, **Technological integration** that includes access to warning systems, communication devices, and internet resources, **Adaptive capacity** that includes mental and physical

readiness for landslides and participation in preparedness drills and **Social integration** that covers access to community assistance.

HIPM scores for Household Disaster Preparedness in the study area

Mean score for preparedness was found to be high for social integration (0.71 ± 0.21) on a scale of 0 to 1 and Technological integration dimension was (0.67 ± 0.23) indicating that there is relatively high community connectedness and social networks and that the individuals and households are able to utilise electronic devices, internet connectivity and receive timely warning and alert notifications.

Mean score for Adaptive capacity was (0.49 ± 0.28) and for the Knowledge domain (regarding emergency actions and shelter centres) was (0.48 ± 0.26), measured on a scale from 0 to 1. These scores suggest that many individuals and households may not be mentally and physically able to face a landslide emergency, or evacuate safely in an emergency. Knowledge domain score that relates to emergency actions to be taken during a landslide emergency, knowledge of emergency numbers, location of nearby centres and previous landslide experiences also is relatively low. The high standard deviations reflect the variability preparedness across the households

Preparedness was fairly low for the dimensions of loss minimisation (0.26 ± 0.16) and subsistence (0.12 ± 0.16) on a scale from 0 to 1 (Table 4.8). Loss minimisation relates to measures like reinforcement of houses, having property insurance for landslides, whether steps taken to protect documents and plans to protect livestock. Subsistence scores reflect whether emergency savings, supplies etc exist. The mean scores for loss minimisation and subsistence scores indicate very low preparedness among individuals and households in this area.

The overall mean HIPM score was found to be 0.46 ± 0.13 on a zero to one scale that indicates that the individuals and households in the ecologically sensitive areas of Wayanad district are underprepared for landslide disasters.

Table 4.9: HIPM scores for Household Disaster Preparedness

Dimension	Mean score (SD)
Knowledge	0.48 ± 0.26
Subsistence	0.12 ± 0.16
Loss Minimisation	0.26 ± 0.16
Technological Integration	0.67 ± 0.23
Adaptive Capacity	0.49 ± 0.28
Social Integration	0.71 ± 0.21
Overall HIPM score	0.46 ± 0.13

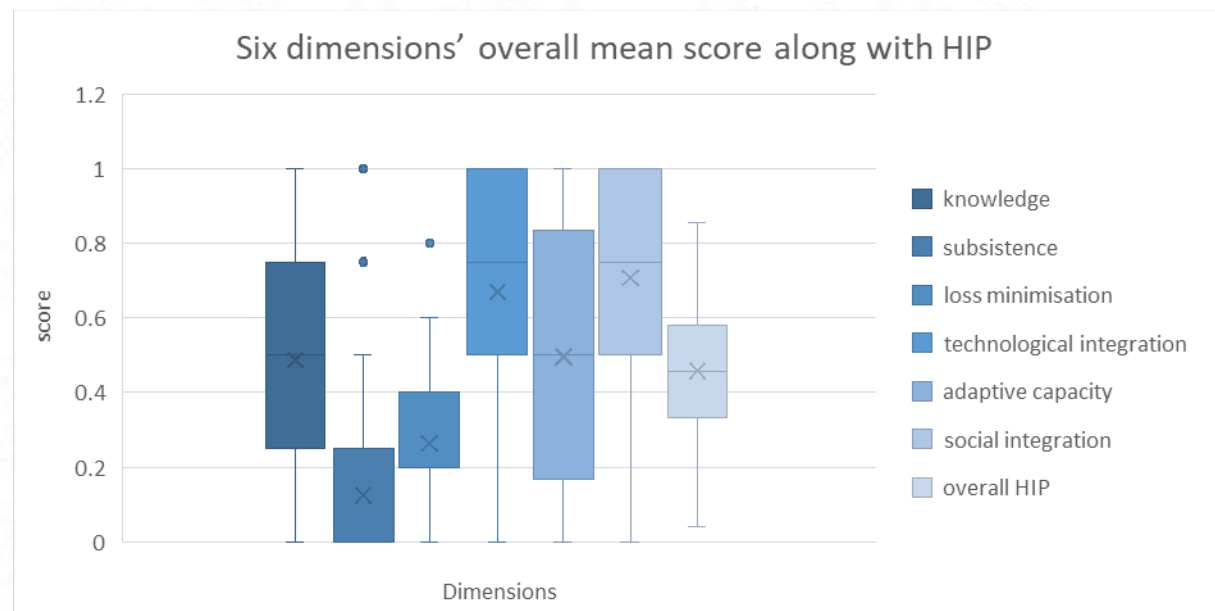


Fig 4.1: Six dimension's overall mean score along with over Household and Individual Preparedness

Correlation between Disaster Preparedness Dimensions

Bivariate correlations using Spearman's rank correlation revealed positive and statistically significant relationships between all the six dimensions of disaster preparedness. This indicates that improvements in one domain are likely to be associated with improvements in

other areas. For example if knowledge or subsistence is improved it will be associated with improvements in other areas like loss minimisation and technological integration.

Table 4.10 Spearman's Rank Correlation Matrix of Disaster Preparedness Dimensions

Variables	Knowledge	Subsistence	Loss Minimisation	Technological Integration	Social Integration	Adaptive Capacity
Knowledge	1.000	.139**	.259**	.328**	.319**	.481**
Subsistence	.139**	1.000	.281**	.234**	.107*	.238**
Loss Minimisation	.259**	.281**	1.000	.256**	.256**	.405**
Technological Integration	.328**	.234**	.256**	1.000	.237**	.418**
Social Integration	.319**	.107*	.256**	.237**	1.000	.289**
Adaptive Capacity	.481**	.238**	.405**	.418**	.289**	1.000

p < .01 (**) | p < .05 (*)

4.1.5 BIVARIATE ANALYSIS

In this section, results of the simple linear regression are presented. The association between overall disaster preparedness score and socio-demographic, risk exposure, and risk reduction variables are presented in Table 4.10

Results indicate that farmers had significant positive association with preparedness and daily wage workers had a negative association than the unemployed. Those aged between 65-79 showed significant negative association with preparedness compared to the reference group (18-24 years). Higher socioeconomic status, higher educational qualifications and those who lived in pucca housing showed positive association with overall preparedness compared to the reference categories. Participation in community programs, communication with authorities, awareness of preparedness initiatives, shelter centre visits,

and prior landslide experience also had a positive significant positive action with the overall household preparedness score.

Table 4.11: Association between Overall Household Disaster Preparedness score and Socio-Demographic, Risk Exposure, and Risk Reduction Variables

Predictor	B	p-value	95% CI (Lower–Upper)
Occupation			
Unemployed (ref.)			
Coolie/ daily wage	-0.048	0.017	-0.087 – -0.009
Employed in govt/ private sector	0.047	0.063	-0.003 – 0.097
Farmers	0.152	0.001	0.064 – 0.240
Business	0.035	0.415	-0.050 – 0.121
Age			
18-24 (ref.)			
25-44	-0.112	0.056	-0.227 – 0.003
45-64	-0.096	0.094	-0.208 – 0.016
65-79	-0.151	0.014	-0.270 – -0.031
SES			
Low SES (ref.)			
High SES	0.067	0.001	0.028 – 0.107
Highest educational qualification attained by any household member			
No schooling (ref.)			
High school	0.133	0.029	0.014 – 0.252
Graduate and above	0.176	0.004	0.05 – 0.29
Type of house			
Kaccha (ref.)			
Pucca	0.151	0.001	0.08 – 0.21
Semi-pucca	0.061	0.067	-0.00 – 0.12
Community program participation			
No participation in Community Programs (ref.)			
Participation in Community Programs	0.084	0.001	0.04 – 0.12
Communication with authorities			
No communication with Authorities (ref.)			
Communicates with Authorities	0.085	0.001	0.05 – 0.12
Awareness of initiatives			
Unaware of DRR initiatives (ref.)			
Aware of DRR Initiatives	0.128	0.001	0.096– 0.16
Shelter centre visit			
Did not visit shelter centre (ref.)			

Visited shelter centre	0.060	0.001	0.02 – 0.09
Landslide experience			
No Experience of Landslide (ref.)			
Experience of Landslide	0.047	0.008	0.01 – 0.08

4.1.6 MULTIPLE LINEAR REGRESSION

Multiple linear regression was performed with overall HIPM score as dependent variable. The model included variables that were found to be significant in the bivariate (simple linear regression) analysis. The results indicated that those who actively engaged in community programs, who were aware of the risk reduction initiatives, being a farmer and having prior landslide experience and those who resided in pucca houses had higher overall landslide disaster preparedness

Table 4.12. Variables associated with the overall household disaster preparedness score

Predictor	B	p-value (Sig.) p < .05 (*)	95% CI for B
Awareness of DRR initiatives			
Unaware of DRR initiatives (ref.)			
Aware of DRR Initiatives	0.099	<.001*	0.06, 0.13
Community participation			
No participation in Community Programs (ref.)			
Participation in Community Programs	0.060	.001*	0.02, 0.09
Communication with Authorities			
No communication with Authorities (ref.)			
Communicates with Authorities	0.015	.407	-0.02, 0.04
Shelter centre visit			
Did not visit shelter centre (ref.)			
Visited shelter centre	0.020	.257	-0.01, 0.05
Landslide experience			
No Experience of Landslide (ref.)			
Experience of Landslide	0.044	.010*	0.01, 0.07
Housing type			
Kaccha (ref.)			
Pucca	0.100	.002*	0.03, 0.16
Semi-Pucca	0.040	.204	-0.02, 0.10
Socioeconomic Status			

Low Socioeconomic Status (ref.)			
High Socioeconomic Status	0.022	.287	-0.01, 0.06
Highest educational qualification attained by any household member			
No schooling (ref.)			
Graduate and above	0.083	.132	-0.02, 0.19
High School	0.087	.109	-0.01, 0.19
Age group			
18-24 (ref.)			
25-44	-0.133	.009*	-0.23, -0.03
45-64	-0.126	.013*	-0.22, -0.02
65-79	-0.125	.021*	-0.23, -0.01
Occupation			
Unemployed (ref.)			
Coolie/ daily wage	-0.034	.079	-0.07, 0.00
Employed in govt/ private sector	0.022	.368	-0.02, 0.06
Farmers	0.085	.038*	0.005, 0.16
Business	0.035	.368	-0.04, 0.11

CHAPTER 5

DISCUSSION AND CONCLUSION

The study aimed to assess the level of disaster preparedness score using the Holistic Individual Preparedness Model (HIPM), among the residents of the ecologically sensitive zones of Wayanad district, Kerala. This study also explored how socio-economic factors and community participation influenced landslide disaster preparedness. The overall disaster preparedness had six dimensions, which included knowledge, subsistence, loss minimisation, technological integration, adaptive capacity, and social integration.

Levels of landslide disaster preparedness

The overall disaster preparedness score for Wayanad district was 0.46 (on a scale of zero to one), indicating under preparedness, particularly considering Wayanad's ecological sensitivity. This is similar to the preparedness levels observed in the vulnerable flood preparedness scores of Bangladesh (Rahman et al., 2024). Among the HIPM dimensions, social integration (0.71) and technological integration (0.67) had the highest scores, suggesting good networks of sharing and access to communication channels. Similar findings of high social integration including informal networks between neighbours, relatives, and community groups have been reported to be positive in enhancing disaster resilience in flood prone areas. (Babcicky&Seebauer, 2017). The mixed socioeconomic settlement pattern observed in Wayanad would have also benefitted the community in strengthening their social network (Ali and George, 2022).

In contrast, subsistence (0.12) and loss minimization (0.26) domains were found to have least scores, reflecting gaps in family level evacuation planning, savings and supplies to face the landslide disasters, and protection of properties and documents. Similar findings have been reported by other studies conducted in flood-prone regions such as Malawi,

Bangladesh, Ghana, and Indonesia. Most households fail to stock essential items such as dry food, baby food, and other essential food items before monsoon, reflecting the lack of subsistence planning during the floods in Bangladesh (Chanda Shimi et al., 2010). Loss minimization dimension score was relatively low, as affordable physical adaptations like raising the elevation of houses or building concrete or mud barriers were either absent or limited to a minority, similar to the studies on preparedness for disasters from other countries. (Yin et al., 2021; Marfai et al., 2015).

Disaster preparedness and associated factors

Housing type was found to be significantly associated with disaster preparedness; better housing type and higher socioeconomic status were positively associated with preparedness, similar to the findings from other major disaster preparedness studies (Yin et al., 2021). The participants who engaged in community programs were found to have higher preparedness than those who did not participate as reported in international literature (Ali & George, 2021; Ford et al., 2006). This can be possibly due to the strong social network they built through engaging in community programs.

In a case study done in Kochi, following the floods of 2018 and 2019, the chances of individuals undertaking all other disaster mitigation measures increased by 23% when community participation was present (Ali & George, 2021). Similarly, individuals who participated in village-based activities were 5.2% more likely to undertake risk reduction actions compared to those not engaging in community activities according to a study conducted in the Tsunami prone areas of Thailand (Witvorapong et al. 2015). Participants who were aware of risk reduction initiatives had high preparedness, compared to those who were not aware. Awareness campaigns and training was found to be effective in enhancing disaster risk reduction (Khan et al. 2021). Prior landslide experience was associated with

increased preparedness. Study from Thailand also observed that prior Tsunami experience influenced technological integration and overall disaster preparedness. (Witvorapong et al. 2015).

This study found that individual and household characters like pucca housing type, prior landslide experience and occupation were significantly associated with high preparedness. Other studies have found that individual and household characteristics such as gender, marital status, and income level, previous disaster experiences, losing someone due to disaster, having a differently-abled member, house ownership, and house material influenced disaster preparedness (Tohan et al. 2024) (Teo et al., 2018). Other studies have found that women often had stronger preparedness levels due to greater risk perception and social networking (Fothergill, 1996; Witvorapong et al., 2015). However, this study did not find any such association. Similar to my study no significant correlation was found between knowledge and disaster preparedness and married status or gender in study (Munthali et al., 2024).

5.1 Strength of the study

The Holistic Individual Preparedness Model offers a comprehensive framework for assessing disaster readiness by integrating physical, psychological, and social dimensions, unlike traditional models that primarily focus on physical safety. This is the first study to apply HIPM to assess disaster preparedness in the Indian context. It helps to capture a multidimensional understanding of individual and household preparedness study and provides a more nuanced understanding of preparedness, and the findings could help strengthen both individual and household-level preparedness for landslide disasters.

5.2 Limitations of the study

This study used a novel framework HIPM, to measure disaster preparedness which may potentially possess certain limitations. Though a comprehensive tool, it has not yet been formally validated in the Indian context, which could affect the cultural and contextual relevance of certain indicators. Further validation studies are recommended to strengthen its applicability. Social desirability bias could have influenced participants' responses, particularly on self-reported preparedness behaviours. The modification brought to the initially planned sampling strategy by dropping Thirunnelly grama panchayath due to safety concerns due to the warnings about the presence of three tigers known to attack humans and domestic animals in the neighboring regions and the shift from systematic sampling to consecutive sampling due to hilly terrains and scattered settlements might have affected the generalizability and randomness of the study.

5.3 Conclusion and recommendations

The study found that the overall individual and household landslide disaster preparedness in Wayanad's ecologically sensitive areas remains underprepared even after repeated disasters in the area. Overall landslide disaster preparedness was significantly associated with sociodemographic and risk reduction factors. Community participation and awareness of disaster risk reduction initiatives (DRR), prior experience of landslides, and household characteristics like residing in pucca houses had significantly higher landslide disaster preparedness. People from the older age groups were less prepared than the younger adults, and the unemployed had lower preparedness compared to groups like farmers. The findings point to the importance of focusing on the most vulnerable socioeconomic and demographic groups and encouraging community engagement, and providing hands-on training on landslide disaster risk reduction.

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ANNEXURE – I

Participant Information Sheet

Greetings Sir/Ma'am,

I am Reshma N Babu, a Masters of Public Health student at Achutha Menon Centre for Health Science Studies (AMCHSS) in Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST) Trivandrum. As part of my course, I am doing a dissertation titled **“Household Disaster Preparedness and Associated Factors in The Ecologically Sensitive Zones of Wayanad District, Kerala”**. This study is being conducted by me as principal investigator under the supervision of Dr Manju R Nair, Scientist D at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum.

Purpose

I am approaching you to assess your household level preparedness for landslides. I kindly request your cooperation and spare some of your time to discuss various disaster preparedness related activities in your household. For this purpose, I will have to ask you some questions through an interview that will take around 30 minutes of your time.

Benefits from the study

The study may not benefit you directly. Nevertheless, study findings can improve our understanding of the disaster preparedness of households prone to landslides. The findings could also contribute to policy efforts to improve disaster preparedness and response.

Possible harms from the study

There is no likely direct harm from participating in the study. Discussing about natural disasters may induce stress and anxiety in such instances we can take a break and resume only if you are comfortable.

Withdrawal from the study

Your participation in the study will be entirely voluntary. You can withdraw from the study at any point of time, without any consequences.

Confidentiality of your data

The information collected will be kept highly confidential and will be safe with the researcher. Your personal details will not be shared with anyone at any stage. The data without personal identifiers will be used for the analysis and the study findings would be presented in an aggregate form.

Contact information

If you have any research related questions or you would like to verify my credentials, you may contact me or the member secretary of our institute's ethics committee at the following address at the following address:

Dr Reshma N Babu

MPH 2023, (E-Code: 50337)

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Guide

Dr Manju Nair

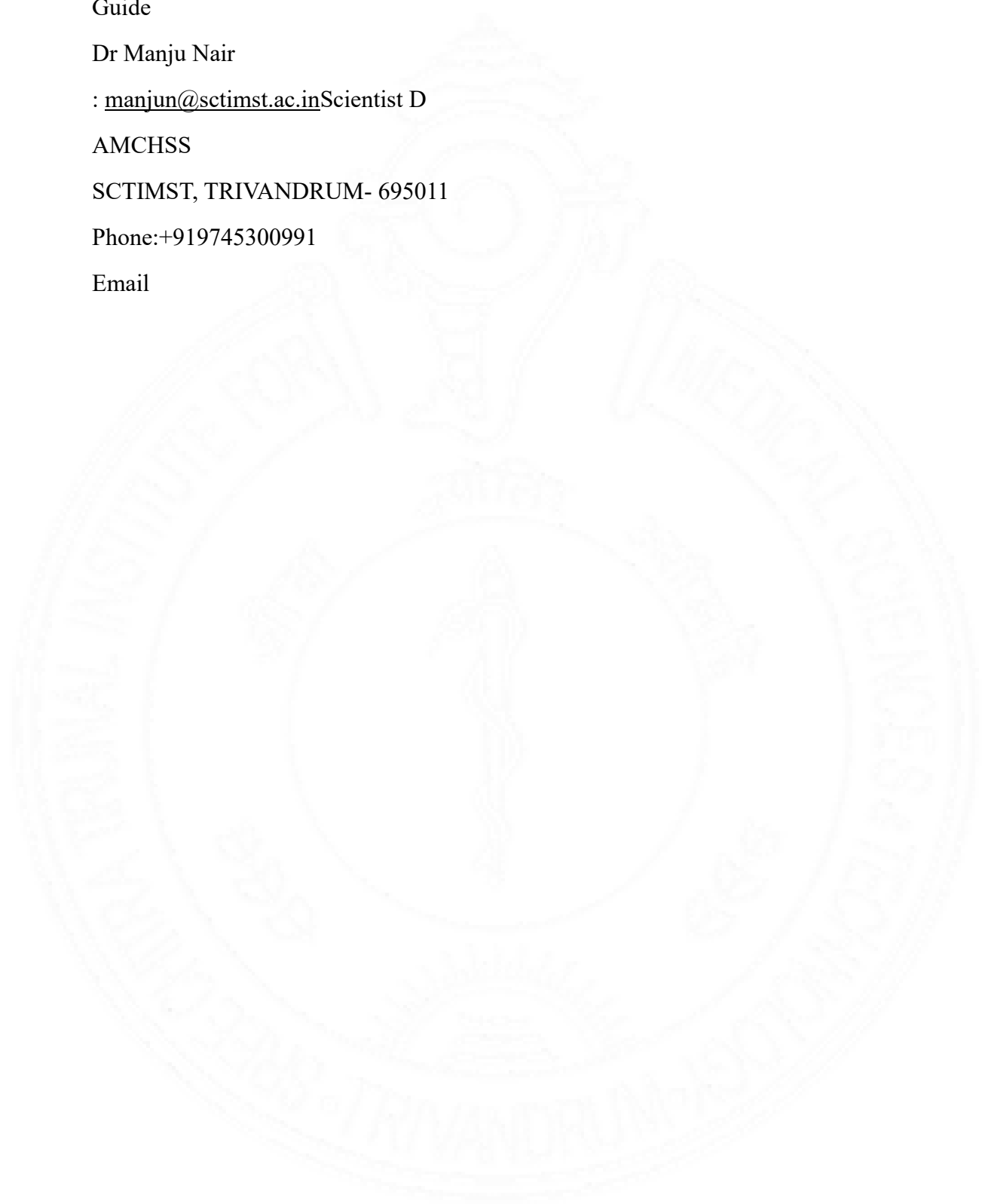
: manjun@sctimst.ac.inScientist D

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Email



Informed Consent Form

- a) I have read about this study in the information form and I have clarified all the doubts that I had. ☐
- b) I also understand that my participation in the study is voluntary and that I can, at any time, discontinue my participation in the study. ☐
- c) I understand my identity won't be revealed in any published or released information from this study. ☐
- d) I am voluntarily agreeing to be part of this study. ☐

Date :

Signature /Thumb impression of the Respondent:

Verbal Consent (In Case Needed)

Signature of witness:

Relation to the participant:

Name of the witness:

Name of the Investigator:

Signature:

----/----/-----

Date

ANNEXURE-II

പങ്കെടുക്കുന്നയാൾക്കുള്ള വിവരങ്ങൾ അടങ്ങിയ ഷീറ്റ്

അഭിവാദ്യങ്ങൾ സർ / മാഡം,

ഞാൻ രേഷ്മ എൻ ബാബു ,തിരുവനന്തപുരം ശ്രീചിത്ര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആൻഡ് ടെക്നോളജിയിലെ അച്യുതമേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസിലെ (എ.എം.സി.എച്ച്.എസ്.എസ്)പബ്ലിക് ഹെൽത്ത് വിദ്യാർത്ഥിനിയാണ്. എന്റെ കോഴ്സിന്റെ ഭാഗമായി **കേരളത്തിലെ വയനാട് ജില്ലയിലെ പരിസ്ഥിതി ലോല മേഖലകളിലെ ഗാർഹിക ദുരന്ത തയ്യാറെടുപ്പും അനുബന്ധ ഘടകങ്ങളും എന്ന ഓഫ് വിഷയത്തിൽ ഒരു പഠനം നടത്തുകയാണ്.** തിരുവനന്തപുരം ശ്രീചിത്ര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആൻഡ് ടെക്നോളജിയിലെ അച്യുതമേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസിലെ സയൻസ് ഡി ഡോ.മഞ്ജു ആർ നായരുടെ മേൽനോട്ടത്തിൽ പ്രിൻസിപ്പൽ ഇൻവെസ്റ്റിഗേറ്റർ എന്ന നിലയിലാണ് ഞാൻ ഈ പഠനം നടത്തുന്നത്.

ലക്ഷ്യം

മണ്ണിടിച്ചിലിനെ നേരിടാനുള്ള നിങ്ങളുടെ ഗാർഹിക തലത്തിലുള്ള തയ്യാറെടുപ്പുകൾ വിലയിരുത്താനാണ് ഞാൻ നിങ്ങളെ സമീപിക്കുന്നത്. ഞാൻ ദയവായി നിങ്ങളുടെ സഹകരണം അഭ്യർത്ഥിക്കുന്നു, നിങ്ങളുടെ വീട്ടിലെ വിവിധ ദുരന്ത തയ്യാറെടുപ്പുകളുമായി ബന്ധപ്പെട്ട പ്രവർത്തനങ്ങൾ ചർച്ച ചെയ്യാൻ നിങ്ങളുടെ കുറച്ച് സമയം നീക്കിവയ്ക്കുക. ഈ ഉദ്ദേശത്തിനായി, നിങ്ങളുടെ സമയത്തിന്റെ ഏകദേശം 30 മിനിറ്റ് എടുക്കുന്ന ഒരു അഭിമുഖത്തിലൂടെ ഞാൻ നിങ്ങളോട് ചില ചോദ്യങ്ങൾ ചോദിക്കേണ്ടതുണ്ട്.

പഠനത്തിൽ നിന്നുള്ള നേട്ടങ്ങൾ

പഠനം നിങ്ങൾക്ക് നേരിട്ട് പ്രയോജനം ചെയ്തേക്കില്ല. എന്നിരുന്നാലും, ഉരുൾപൊട്ടൽ സാധ്യതയുള്ള വീടുകളുടെ ദുരന്ത തയ്യാറെടുപ്പുകളെക്കുറിച്ചുള്ള നമ്മുടെ ധാരണ മെച്ചപ്പെടുത്താൻ പഠന കണ്ടെത്തലുകൾക്ക് കഴിയും. ദുരന്ത തയ്യാറെടുപ്പുകളും പ്രതികരണവും മെച്ചപ്പെടുത്തുന്നതിനുള്ള നയപരമായ ശ്രമങ്ങൾക്കും കണ്ടെത്തലുകൾ സംഭാവന നൽകും.

പഠനത്തിൽ നിന്ന് സംഭവ്യമായ ദോഷങ്ങൾ

പഠനത്തിൽ പങ്കെടുക്കുന്നതിൽ നിന്ന് നേരിട്ടുള്ള ദോഷമൊന്നും ഉണ്ടാകാൻ സാധ്യതയില്ല. പ്രകൃതി കുറിച്ച് പ്രകൃതി ദുരന്തങ്ങളെ കുറിച്ച് ചർച്ച ചെയ്യുന്നത് നിങ്ങളിൽ സമ്മർദ്ദവും ഉത്കണ്ഠയും ഉണ്ടാക്കിയേക്കാം, അത്തരം സന്ദർഭങ്ങളിൽ നമുക്ക് ഒരു ഇടവേള എടുത്ത് പുനരാരംഭിക്കാം. നിങ്ങളുടെ സൗകര്യത്തിന് അനുസരിച്ച് മാത്രം.

പഠനത്തിൽ നിന്നുള്ള പിൻവാങ്ങൽ

പഠനത്തിലെ നിങ്ങളുടെ പങ്കാളിത്തം പൂർണ്ണമായും സ്വമേധയാ ആയിരിക്കും. അനന്തരഫലങ്ങളൊന്നുമില്ലാതെ, ഏത് സമയത്തും നിങ്ങൾക്ക് പഠനത്തിൽ നിന്ന് പിൻവാങ്ങാവുന്നതാണ്.

നിങ്ങളുടെ ഡാറ്റയുടെ രഹസ്യത്വം

ശേഖരിക്കുന്ന വിവരങ്ങൾ അതീവ രഹസ്യസ്വഭാവത്തോടെ സൂക്ഷിക്കുകയും ഗവേഷകന്റെ പക്കൽ സുരക്ഷിതമായിരിക്കുകയും ചെയ്യും. നിങ്ങളുടെ വ്യക്തിഗത വിശദാംശങ്ങൾ ഒരു ഘട്ടത്തിലും ആരുമായും പങ്കിടില്ല. വ്യക്തിഗത വിവരങ്ങൾ ഇല്ലാത്ത ഡാറ്റ വിശകലനത്തിനായി ഉപയോഗിക്കുകയും പഠന കണ്ടെത്തലുകൾ മൊത്തത്തിലുള്ള രൂപത്തിൽ അവതരിപ്പിക്കുകയും ചെയ്യും.

സമ്പർക്ക വിവരങ്ങൾ

നിങ്ങൾക്ക് ഗവേഷണവുമായി ബന്ധപ്പെട്ട എന്തെങ്കിലും ചോദ്യങ്ങൾ ഉണ്ടെങ്കിൽ അല്ലെങ്കിൽ എന്റെ യോഗ്യതാപത്രങ്ങൾ പരിശോധിക്കാൻ നിങ്ങൾ ആഗ്രഹിക്കുന്നുവെങ്കിൽ, എന്നെയോ ഞങ്ങളുടെ ഇൻസ്റ്റിറ്റ്യൂട്ടിന്റെ എത്തിക്സ് കമ്മിറ്റി മെമ്പർ സെക്രട്ടറിയെയോ ബന്ധപ്പെടാം

ഡോ രേഷ്മ എൻ ബാബു

എംപിഎച്ച് 2023, (ഇ-കോഡ്: 50337)

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ഗൈഡ്

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സയൻസിസ് ഡി

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സമ്മത പത്രം

a) വിവര ഫോമിൽ ഈ പഠനത്തെ കുറിച്ച് ഞാൻ വായിച്ചിട്ടുണ്ട്, എനിക്ക് ഉണ്ടായിരുന്ന എല്ലാ സംശയങ്ങളും ഞാൻ വ്യക്തമാക്കിയിട്ടുണ്ട്. ☐

b) പഠനത്തിലെ എന്റെ പങ്കാളിത്തം സ്വമേധയാ ഉള്ളതാണെന്നും ഏത് സമയത്തും പഠനത്തിലെ എന്റെ പങ്കാളിത്തം എനിക്ക് നിർത്താമെന്നും ഞാൻ മനസ്സിലാക്കുന്നു. ☐

c) പ്രസിദ്ധീകരിച്ചതോ പുറത്തിറങ്ങിയതോ ആയ വിവരങ്ങളിൽ എന്റെ സ്വകാര്യ വിവരങ്ങൾ വെളിപ്പെടുത്തില്ലെന്ന് ഞാൻ മനസ്സിലാക്കുന്നു. ☐

ഡി) ഈ പഠനത്തിന്റെ ഭാഗമാകാൻ ഞാൻ സ്വമേധയാ സമ്മതിക്കുന്നു. ☐

തീയതി

മറുപടി നൽകുന്നയാളുടെ ഒപ്പ് / പെരുവിലടയാളം:

വാക്കാലുള്ള സമ്മതം (ആവശ്യമെങ്കിൽ)

സാക്ഷിയുടെ ഒപ്പ്:

പങ്കാളിയുമായുള്ള ബന്ധം:

സാക്ഷിയുടെ പേര്:

അന്വേഷകന്റെ പേര്:

ഒപ്പ്:

-----/-----/-----തീയതി

ANNEXURE – III

Interview schedule - English

Achutha Menon Centre for Health Science Studies (AMCHSS)

Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST)
Trivandrum

Interview Schedule to understand the Household disaster preparedness and associated factors in ecologically sensitive areas of Wayanad.

Date:.....

Household ID:.....

Ward

.....

Screening question

1.	How long have you been living at this address?	>1 year - excluded
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I would like to ask you some details regarding yourself and your household

SECTION 1: SOCIODEMOGRAPHIC INFORMATION

SNO.	QUESTIONS	RESPONSES
1	How old are you? (in completed years)	
2	Sex of the respondent	☐ 1.Male ☐ 2.Female ☐ 3.Other
3	Marital status	☐ 1,Married ☐ 2,Unmarried ☐ 3.Others(widowed/separated/divorced)
4	Does your household have any children less than 5 years /pregnant member/old person ?	4.1 Children less than 5 years old Yes- ☐ No- ☐ 4.2 Pregnant woman Yes- ☐ No- ☐ 4.3 Elderly person aged ≥ 60 years Yes- ☐ No- ☐

5	What is your educational qualification?	☐ 1.Illiterate ☐ 2.Primary school ☐ 3.High school ☐ 4.Graduate ☐ 5.Post-graduate
6	What is the highest level of educational qualification attained by any member of the household?	☐ 1.Illiterate ☐ 2.Primary school ☐ 3.High school ☐ 4.Graduate ☐ 5.Post graduate
7	What is your occupation?	
8	What is the occupation of the head of this household?	
9	How many members are currently living in this household?	
10	What is the monthly household income?	
11	Does anyone in the household own this house or is it rented?	☐ 1.Rented ☐ 2.Own ☐ 3.Others
12	What is the colour of your ration card?	☐ 1.Yellow ☐ 2.Pink ☐ 3.Blue ☐ 4.White
13	Type of house (researcher's assessment)	☐ 1.Kaccha ☐ 2.Pucca ☐ 3.Semi-Pucca
14	Socioeconomic status of the household (researcher's assessment)	☐ 1.Class 1 ☐ 2.Class 2 ☐ 3.Class 3 ☐ 4.Class 4 ☐ 5.Class 5

SECTION 2:RISK PERCEPTION

SNO.	QUESTIONS	RESPONSES
1	How safe do you think your living place is from landslides?	☐ 1.Safe ☐ 2.Unsafe ☐ 3.Very unsafe
2	Has the frequency of rains increased in your locality in the last five years?	Yes No
3	Have you ever experienced or witnessed landslides in your locality?	Yes No
4	If yes, in which year did you last experience a landslide?	
5	What do you think are the major causes of landslides in your area? (Tick the relevant responses, multiple options)	☐ 1.Heavy rainfall ☐ 2.Unstable soil ☐ 3.Mining ☐ 4.Deforestation ☐ 5.Large scale Constructions ☐ 6.Steep slope topography ☐ 7.Others (specify).....
6	Do you think human activities contribute to the occurrence of landslides?	Yes No
7	If yes, which human activities contribute to the occurrence of landslides?	
8	On a scale of 1 to 10, how would you rate the possible occurrence of a landslide in your area in the next year?	
9	On a scale of 1 to 10, how would you rate the risk of landslides affecting your home or livelihood?	
10	What do you think are the major consequences of landslides? (Tick the relevant responses, multiple options)	☐ 1.Loss or Damage of Household ☐ 2.Loss or change in livelihood Pattern ☐ 3.Disruption of movements ☐ 4.Disruption of services ☐ 5.Illnesses ☐ 6.Others(specify).....
11	Have you ever received a warning about potential landslides?	Yes No
12	What is the main source of getting information on landslides in your area? (Tick the relevant responses, multiple options)	☐ 1.Electronic media (TV, Radio) ☐ 2.People (Community, Family Members) ☐ 3.National and local Authority (KSDMA/Panchayat/Kudumbasree mission)

		☐ 4.Internet (website) ☐ 5.Social media ☐ 6.Print Media ☐ 7.Didn't hear about landslides from any media ☐ 8.Others(specify).....
13	Among the sources providing warnings/alerts which of those do you trust the most?	☐ 1.Electronic media (TV, Radio) ☐ 2.People (Community, Family Members) ☐ 3.National and local Authority (KSDMA/Panchayat/Kudumbasree mission) ☐ 4.Internet (website) ☐ 5.Social media ☐ 6.Print Media ☐ 7.Didn't hear about landslides from any media ☐ 8.Others(specify).....
14	How would you assess the level of flood forecasting and flood warning by the authorities?	☐ 1.Very Adequate ☐ 2.Adequate ☐ 3.Inadequate ☐ 4.Very Inadequate ☐ 5.No Forecasting at All

SECTION 3: HOUSEHOLD DISASTER PREPAREDNESS

3.1 LANDSLIDE KNOWLEDGE

SNO.	QUESTIONS	RESPONSES
1	Do you have any experience of landslides before?	Yes/No
2	Do you know what are the actions to be taken during a landslide emergency?	Yes/No
3	Do you have emergency numbers to be contacted during a landslide emergency?	Yes/No
4	Do you know the locations of landslide shelters in your locality?	Yes/No

3.2 SUBSISTENCE

SNO.	QUESTIONS	RESPONSES
5	Do you have emergency savings for landslide emergencies in future?	Yes/No
6	Do you have an emergency kit with necessary gadgets and tools?(torch,extra battery, first aid kit,personal items etc)	Yes/No
7	Do you store food(rice/pulses/baby food) for the family members before monsoon to ensure supplies in case of any landslide emergencies?	Yes/No
8	Do you keep cash at home for emergencies?	Yes/No

3.3 LOSS MINIMIZATION

SNO.	QUESTIONS	RESPONSES
9	Have you reinforced your house to protect it from future landslide damages?	Yes/No
10	Do you have any insurance for your property that covers landslide damage?	Yes/No
11	Have you ever used the DigiLocker or similar facilities to store your important documents?	Yes/No
12	Have you stored important documents and valuable assets in a safe place?	Yes/No
13	Do you have a plan to move your livestock or other assets if there's a landslide warning?	Yes/No

3.4 TECHNOLOGICAL INTEGRATION

SNO.	QUESTIONS	RESPONSES
13	Do you receive timely notification of landslide warnings and alerts?	Yes/No
14	Do you have devices like TV/Radio/Mobile to communicate and receive landslide information?	Yes/No
15	Do you have internet connectivity to access landslide information?	Yes/No
16	Do you know how to use social media platforms to report or get updates on landslide emergencies?	Yes/No

3.5 ADAPTIVE CAPACITY

SNO.	QUESTIONS	RESPONSES
17	Do you think you are physically prepared to cope with a landslide emergency?	Yes/No
18	Do you think you are mentally prepared to cope with a landslide emergency?	Yes/No
19	Do you think all your household members are physically prepared to cope with a landslide emergency?	Yes/No
20	Do you think all your household members are mentally prepared to cope with a landslide emergency?	Yes/No
21	Do you think you can evacuate your home and move to a safer place if needed during a landslide emergency?	Yes/No
22	Have you ever received any kind of mock drills for a landslide emergency?	Yes/No

SECTION4: COMMUNITY PARTICIPATION

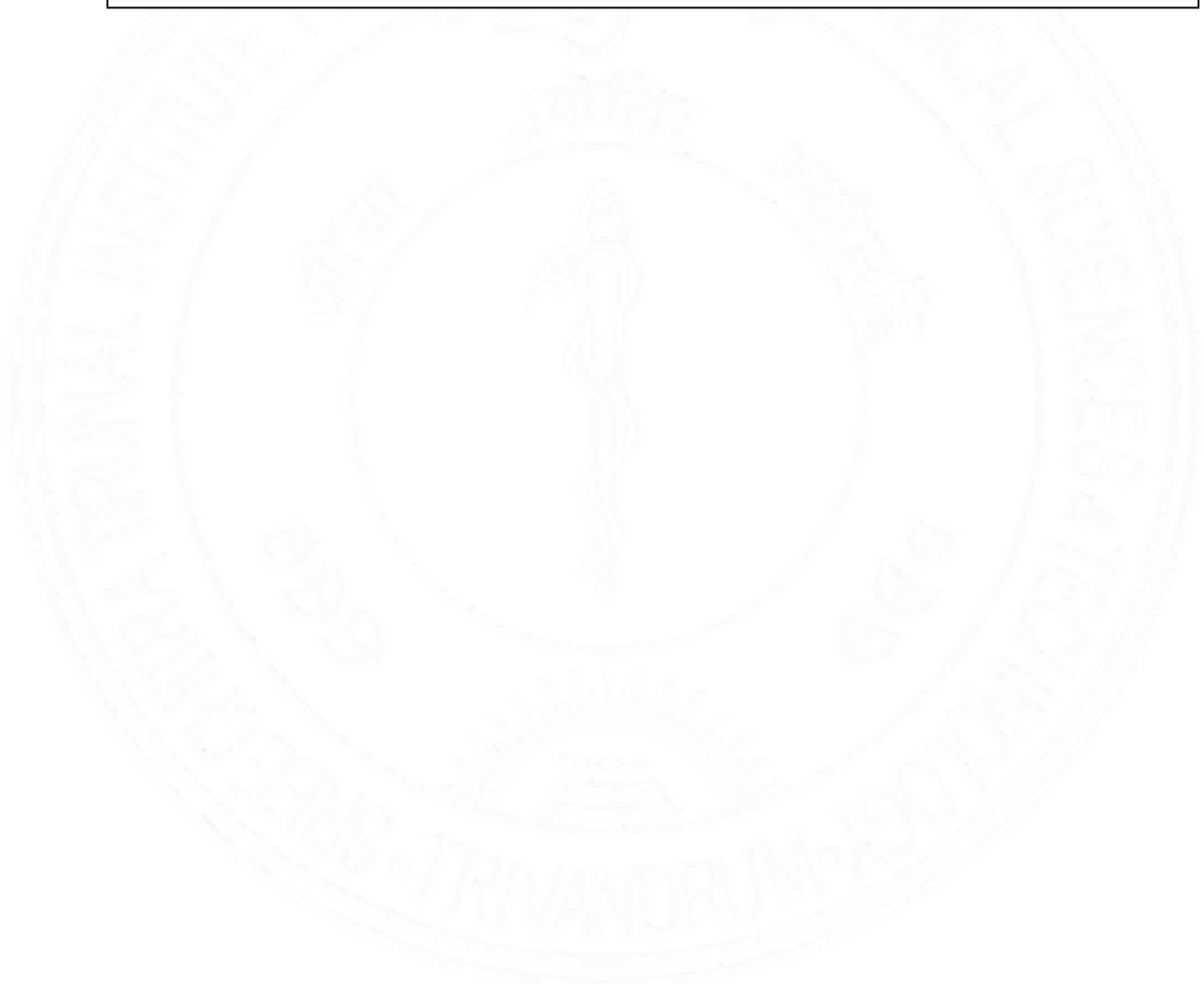
4.1 SOCIAL INTEGRATION

SNO.	QUESTIONS	RESPONSES
23	Do you have emergency contact information of any person/s (relatives/neighbours/) from whom you can get help during a landslide emergency?	Yes/No
24	Have you received any kind of help (services/goods) from your community during any emergencies?	Yes/No
25	Do you share landslide related information to your community?	Yes/No
26	Do you feel comfortable discussing landslide risks and preparedness plans with your neighbours?	Yes/No

4.2 COMMUNITY ENGAGEMENT

SNO.	QUESTIONS	RESPONSES
1	Have you ever been a part of any initiatives for community landslide preparedness like drills, meetings or training programs in past 12 months?	Yes/No
2	Are you aware of any community disaster risk reduction initiatives in your area?	Yes/No
3	Are you aware of any active communication channels (e.g., social media platforms/ neighbourhood alerts) where disaster news gets shared regularly in your community?	Yes/No
4	Are you involved in any community initiatives for disaster risk reduction?	Yes/No
5	Are you aware of any community groups that arrange training sessions on disaster risk reduction in your area?	Yes/No
6	Have you ever gone to the Shelter Center in your locality after a landslide?	Yes/No
7	If no Major reason for not going to shelter	Long Distance Weak Shelter Others (specify).....
8	Have you ever communicated with local authorities or disaster management teams regarding disaster risk reduction in your area?	Yes/No
9	If yes, how often do you communicate with local authorities or disaster management teams regarding disaster risk reduction in your area?	☐ 1.Rarely ☐ 2.Occasionally ☐ 3.Frequently
10	Do you actively participate in any community programmes conducted in your area?	Yes/No

5. Apart from all of these preparedness measures, is there anything else that you do as a precaution against landslides?



ANNEXURE-IV

ഇൻറർവ്യൂ ഷെഡ്യൂൾ - മലയാളം

Achutha Menon Centre for Health Science Studies (AMCHSS)

Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST)

Trivandrum

വയനാട്ടിലെ പരിസ്ഥിതി ലോല പ്രദേശങ്ങളിലെ ഗാർഹിക ദുരന്ത തയ്യാറെടുപ്പുകളും അനുബന്ധ ഘടകങ്ങളും മനസിലാക്കുന്നതിനുള്ള അഭിമുഖ ഷെഡ്യൂൾ.

തീയതി:.....

ഗാർഹിക ഐഡി:

വാർഡ്

.....

സ്ക്രീനിംഗ് ചോദ്യം

1.	ഈ വിലാസത്തിൽ നിങ്ങൾ എത്ര കാലമായി താമസിക്കുന്നു?	>1 വർഷം - ഒഴിവാക്കി
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നിങ്ങളെയും നിങ്ങളുടെ കുടുംബത്തെയും കുറിച്ചുള്ള ചില വിശദാംശങ്ങൾ നിങ്ങളോട് ചോദിക്കാൻ ഞാൻ ആഗ്രഹിക്കുന്നു

വിഭാഗം 1: സോഷ്യോഡെമോഗ്രാഫിക് വിവരങ്ങൾ

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
1	നിങ്ങൾക്ക് എത്ര വയസ്സായി? (പൂർത്തിയായ വർഷങ്ങളിൽ)	
2	പ്രതികരിക്കുന്നയാളുടെ ലിംഗഭേദം	☐ 1. പുരുഷൻ ☐ 2. സ്ത്രീ ☐ 3. മറ്റുള്ളവ
3	വൈവാഹിക നില	☐ 1. വിവാഹിതൻ ☐ 2. അവിവാഹിതൻ ☐ 3. മറ്റുള്ളവർ (വിധവ / വേർപിരിഞ്ഞ / വിവാഹമോചനം നേടിയവർ)
4	നിങ്ങളുടെ വീട്ടിൽ 5 വയസ്സിൽ താഴെയുള്ള കുട്ടികൾ ഉണ്ടോ / ഗർഭിണിയായ അംഗം / പ്രായമായ വ്യക്തി ഉണ്ടോ?	4.1 5 വയസ്സിൽ താഴെയുള്ള കുട്ടികൾ ഉണ്ട്- ☐ ഇല്ല- ☐ 4.2 ഗർഭിണിയായ സ്ത്രീ അതെ- ഉണ്ട്- ☐ ഇല്ല- ☐ 4.3 >=60 വയസ്സ് പ്രായമുള്ള പ്രായമായ വ്യക്തി ഉണ്ട്- ☐ ഇല്ല- ☐
5	നിങ്ങളുടെ വിദ്യാഭ്യാസ യോഗ്യത എന്താണ്?	☐ 1. നിരക്ഷരൻ ☐ 2. പ്രൈമറി സ്കൂൾ

		☐ 3. ഹൈസ്കൂൾ ☐ 4. ബിരുദം ☐ 5. ബിരുദാനന്തര ബിരുദം
6	കുടുംബത്തിലെ ഏതെങ്കിലും അംഗം നേടിയ ഏറ്റവും ഉയർന്ന വിദ്യാഭ്യാസ യോഗ്യത എന്താണ്?	☐ 1. നിരക്ഷരൻ ☐ 2. പ്രൈമറി സ്കൂൾ ☐ 3. ഹൈസ്കൂൾ ☐ 4. ബിരുദം ☐ 5. ബിരുദാനന്തര ബിരുദം
7	നിങ്ങളുടെ ജോലി എന്താണ്?	
8	ഗൃഹനാഥന്റെ അല്ലെങ്കിൽ ഗൃഹനാഥയുടെ തൊഴിൽ എന്താണ്?	
9	ഈ വീട്ടിൽ ഇപ്പോൾ എത്ര അംഗങ്ങൾ താമസിക്കുന്നു?	
10	പ്രതിമാസ ഗാർഹിക വരുമാനം എത്രയാണ്?	
11	വീട്ടിലെ ആർക്കെങ്കിലും ഈ വീട് സ്വന്തമാണോ അതോ വാടകയ്ക്ക് എടുത്തതാണോ?	☐ 1. സ്വന്തം വീട് ☐ 2. വാടകവീട് ☐ 3. മറ്റുള്ളവ
12	നിങ്ങളുടെ റേഷൻ കാർഡിന്റെ നിറമെന്താണ്?	☐ 1. മഞ്ഞ ☐ 2. പിങ്ക് ☐ 3. നീല ☐ 4. വെളുത്ത നിറം
13	വീടിന്റെ തരം (ഗവേഷകന്റെ വിലയിരുത്തൽ)	☐ 1. കച്ച ☐ 2. പക്കാ ☐ 3. സെമി പക്കാ
14	കുടുംബത്തിന്റെ സാമൂഹിക സാമ്പത്തിക സ്ഥിതി (ഗവേഷകന്റെ വിലയിരുത്തൽ)	☐ 1. ക്ലാസ്സ് 1 ☐ 2. ക്ലാസ്സ് 2 ☐ 3. ക്ലാസ്സ് 3 ☐ 4. ക്ലാസ്സ് 4 ☐ 5. ക്ലാസ്സ് 5

വിഭാഗം 2: അപകട നിർണ്ണയം

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
1	നിങ്ങളുടെ താമസസ്ഥലം മണ്ണിടിച്ചിലിൽ നിന്ന് എത്രത്തോളം സുരക്ഷിതമാണെന്ന് നിങ്ങൾ കരുതുന്നു?	☐ 1. സുരക്ഷിതം ☐ 2. സുരക്ഷിതമല്ല ☐ 3. വളരെ സുരക്ഷിതമല്ല
2	കഴിഞ്ഞ അഞ്ച് വർഷത്തിനിടയിൽ നിങ്ങളുടെ പ്രദേശത്ത് മഴയുടെ അളവ് വർദ്ധിച്ചിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല

3	നിങ്ങളുടെ പ്രദേശത്ത് നിങ്ങൾ എപ്പോഴെങ്കിലും മണ്ണിടിച്ചിൽ അനുഭവിക്കുകയോ സാക്ഷ്യം വഹിക്കുകയോ ചെയ്തിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
4	ഉണ്ടെങ്കിൽ, ഏത് വർഷമാണ് നിങ്ങൾക്ക് അവസാനമായി മണ്ണിടിച്ചിൽ അനുഭവപ്പെട്ടത്?	
5	നിങ്ങളുടെ പ്രദേശത്തെ മണ്ണിടിച്ചിലിന്റെ പ്രധാന കാരണങ്ങൾ എന്താണെന്ന് നിങ്ങൾ കരുതുന്നു? (പ്രസക്തമായ പ്രതികരണങ്ങൾ, ഒന്നിലധികം ഓപ്ഷനുകൾ ടിക്ക് ചെയ്യുക)	☐ 1. കനത്ത മഴ ☐ 2. അസ്ഥിരമായ മണ്ണ് ☐ 3. ഖനനം ☐ 4. വനനശീകരണം ☐ 5. വൻകിട നിർമ്മാണങ്ങൾ ☐ 6. കുത്തനെയുള്ള ചരിവുള്ള ഭൂപ്രകൃതി ☐ 7. മറ്റുള്ളവ
6	മനുഷ്യ പ്രവർത്തനങ്ങൾ മണ്ണിടിച്ചിൽ സംഭവിക്കുന്നതിന് കാരണമാകുമെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?	ഉണ്ട് / ഇല്ല
7	ഉണ്ടെങ്കിൽ, ഉൾപ്പെട്ടത് ഉണ്ടാകുന്നതിന് കാരണമാകുന്ന മനുഷ്യ പ്രവർത്തനങ്ങൾ ഏതാണ്?	
8	1 മുതൽ 10 വരെയുള്ള സ്കെയിലിൽ, അടുത്ത വർഷം നിങ്ങളുടെ പ്രദേശത്ത് ഒരു മണ്ണിടിച്ചിൽ ഉണ്ടാകാനുള്ള സാധ്യതയെ നിങ്ങൾ എങ്ങനെ വിലയിരുത്തും?	
9	1 മുതൽ 10 വരെയുള്ള സ്കെയിലിൽ, നിങ്ങളുടെ വീടിനെയോ ഉപജീവനത്തെയോ ബാധിക്കുന്ന മണ്ണിടിച്ചിൽ അപകടസാധ്യതയെ നിങ്ങൾ എങ്ങനെ വിലയിരുത്തും?	
10	ഉൾപ്പെട്ടതിന്റെ പ്രധാന പ്രത്യാഘാതങ്ങൾ എന്തൊക്കെയാണെന്ന് നിങ്ങൾ കരുതുന്നു? (പ്രസക്തമായ പ്രതികരണങ്ങൾ, ഒന്നിലധികം ഓപ്ഷനുകൾ ടിക്ക് ചെയ്യുക)	☐ 1. വീടിന്റെ നഷ്ടം അല്ലെങ്കിൽ കേടുപാടുകൾ ☐ 2. ഉപജീവന രീതിയിലെ നഷ്ടം അല്ലെങ്കിൽ മാറ്റം ☐ 3. ചലനങ്ങളുടെ തടസ്സം ☐ 4. സേവനങ്ങൾ തടസ്സപ്പെടുത്തൽ ☐ 5. രോഗങ്ങൾ ☐ 6. മറ്റുള്ളവ (വ്യക്തമാക്കുക).....
11	ഉൾപ്പെട്ടത് സാധ്യതയെക്കുറിച്ച് നിങ്ങൾക്ക് എപ്പോഴെങ്കിലും മുന്നറിയിപ്പ് ലഭിച്ചിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
12	നിങ്ങളുടെ പ്രദേശത്തെ മണ്ണിടിച്ചിലിനെക്കുറിച്ചുള്ള വിവരങ്ങൾ ലഭിക്കുന്നതിനുള്ള പ്രധാന ഉറവിടം എന്താണ്? (പ്രസക്തമായ പ്രതികരണങ്ങൾ, ഒന്നിലധികം ഓപ്ഷനുകൾ ടിക്ക് ചെയ്യുക)	☐ 1. ഇലക്ട്രോണിക് മീഡിയ (ടിവി, റേഡിയോ) ☐ 2. ആളുകൾ (കമ്മ്യൂണിറ്റി, കുടുംബാംഗങ്ങൾ) ☐ 3. ദേശീയ, തദ്ദേശ സ്വയംഭരണ സ്ഥാപനങ്ങൾ

		(കെഎസ്സിഎംഎ / പഞ്ചായത്ത് / കുടുംബശ്രീ മിഷൻ) ☐ 4. ഇന്റർനെറ്റ് (വെബ്സൈറ്റ്) ☐ 5. സോഷ്യൽ മീഡിയ ☐ 6. അച്ചടി മാധ്യമങ്ങൾ ☐ 7. മണ്ണിടിച്ചിലിനെക്കുറിച്ച് ഒരു മാധ്യമങ്ങളിൽ നിന്നും കേട്ടിട്ടില്ല ☐ 8. മറ്റുള്ളവ (വ്യക്തമാക്കുക).....
13	മുന്നറിയിപ്പുകൾ / അലേർട്ടുകൾ നൽകുന്ന ഉറവിടങ്ങളിൽ ഏതാണ് നിങ്ങൾ ഏറ്റവും കൂടുതൽ വിശ്വസിക്കുന്നത്?	☐ 1. ഇലക്ട്രോണിക് മീഡിയ (ടിവി, റേഡിയോ) ☐ 2. ആളുകൾ (കമ്മ്യൂണിറ്റി, കുടുംബാംഗങ്ങൾ) ☐ 3. ദേശീയ, തദ്ദേശ സ്വയംഭരണ സ്ഥാപനങ്ങൾ (കെഎസ്സിഎംഎ / പഞ്ചായത്ത് / കുടുംബശ്രീ മിഷൻ) ☐ 4. ഇന്റർനെറ്റ് (വെബ്സൈറ്റ്) ☐ 5. സോഷ്യൽ മീഡിയ ☐ 6. അച്ചടി മാധ്യമങ്ങൾ ☐ 7. മണ്ണിടിച്ചിലിനെക്കുറിച്ച് ഒരു മാധ്യമങ്ങളിൽ നിന്നും കേട്ടിട്ടില്ല ☐ 8. മറ്റുള്ളവ (വ്യക്തമാക്കുക).....
14	അധികൃതരുടെ വെള്ളപ്പൊക്ക പ്രവചനത്തിന്റേയും വെള്ളപ്പൊക്ക മുന്നറിയിപ്പിന്റേയും തോത് നിങ്ങൾ എങ്ങനെ വിലയിരുത്തും?	☐ 1. വളരെ പര്യാപ്തമാണ് ☐ 2. പര്യാപ്തമാണ് ☐ 3. അപര്യാപ്തമാണ് ☐ 4. വളരെ അപര്യാപ്തമാണ് ☐ 5. ഒരു പ്രവചനവും ഇല്ല

വിഭാഗം 3: ഗാർഹിക ദുരന്ത തയ്യാറെടുപ്പ്

3.1 ഉരുൾപൊട്ടൽ അറിവ്

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
1	ഇതിന് മുമ്പ് മണ്ണിടിച്ചിൽ അനുഭവം ഉണ്ടായിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
2	ഉരുൾപൊട്ടൽ അടിയന്തിര ഘട്ടത്തിൽ സ്വീകരിക്കേണ്ട നടപടികൾ എന്തൊക്കെയാണെന്ന് നിങ്ങൾക്കറിയാമോ?	ഉണ്ട് / ഇല്ല

3	മണ്ണിടിച്ചിൽ അടിയന്തിര സമയത്ത് ബന്ധപ്പെടാൻ നിങ്ങളുടെ പക്കൽ എമർജൻസി നമ്പറുകൾ ഉണ്ടോ?	ഉണ്ട് / ഇല്ല
4	നിങ്ങളുടെ പ്രദേശത്തെ മണ്ണിടിച്ചിൽ രക്ഷാകേന്ദ്രം എവിടെയാണ് എന്ന് നിങ്ങൾക്കറിയാമോ?	ഉണ്ട് / ഇല്ല

3.2 ഉപജീവനം

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
5	ഭാവിയിൽ മണ്ണിടിച്ചിൽ അടിയന്തിര ആവശ്യങ്ങൾക്കായി നിങ്ങൾക്ക് അടിയന്തിര സമ്പാദ്യമുണ്ടോ?	ഉണ്ട് / ഇല്ല
6	ആവശ്യമായ ഗാസ് ജെറ്റുകളും ഉപകരണങ്ങളും അടങ്ങിയ ഒരു എമർജൻസി കിറ്റ് നിങ്ങളുടെ പക്കലുണ്ടോ? (ടോർച്ച്, അധിക ബാറ്ററി, പ്രഥമശുശ്രൂഷ കിറ്റ്, വൃക്കതിഗത വസ്തുക്കൾ തുടങ്ങിയവ)	ഉണ്ട് / ഇല്ല
7	മണ്ണിടിച്ചിൽ അടിയന്തിര സാഹചര്യങ്ങളിൽ വിതരണം ഉറപ്പാക്കുന്നതിന് മഴക്കാലത്തിന് മുമ്പ് കുടുംബാംഗങ്ങൾക്കായി നിങ്ങൾ ഭക്ഷണം (അരി / പയർവർഗ്ഗങ്ങൾ / ബേബി ഫുഡ്) സംഭരിക്കാറുണ്ടോ?	ഉണ്ട് / ഇല്ല
8	അടിയന്തിര ആവശ്യങ്ങൾക്കായി നിങ്ങൾ വീട്ടിൽ പണം സൂക്ഷിക്കാറുണ്ടോ?	ഉണ്ട് / ഇല്ല

3.3 നഷ്ടം കുറയ്ക്കൽ

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
9	ഭാവിയിലെ മണ്ണിടിച്ചിൽ നാശനഷ്ടങ്ങളിൽ നിന്ന് നിങ്ങളുടെ വീട് സംരക്ഷിക്കാൻ നിങ്ങൾ വീട് ശക്തിപ്പെടുത്തിയിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
10	മണ്ണിടിച്ചിൽ നാശനഷ്ടങ്ങൾ പരിരക്ഷിക്കുന്ന നിങ്ങളുടെ സ്വത്തിന് എന്തെങ്കിലും ഇൻഷുറൻസ് ഉണ്ടോ?	ഉണ്ട് / ഇല്ല
11	നിങ്ങളുടെ പ്രധാനപ്പെട്ട രേഖകൾ സൂക്ഷിക്കാൻ നിങ്ങൾ എപ്പോഴെങ്കിലും ഡിജിറ്റൈസ് ചെയ്ത അല്ലെങ്കിൽ അതുപോലുള്ള സൗകര്യം ഉപയോഗിച്ചിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
12	പ്രധാനപ്പെട്ട രേഖകളും വിലയേറിയ സ്വത്തുക്കളും നിങ്ങൾ സുരക്ഷിതമായ സ്ഥലത്ത് സൂക്ഷിച്ചിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
13	മണ്ണിടിച്ചിൽ മുന്നറിയിപ്പ് ഉണ്ടെങ്കിൽ നിങ്ങളുടെ കന്നുകാലികളെയോ മറ്റ് സ്വത്തുക്കളെയോ മാറ്റാൻ നിങ്ങൾക്ക് പദ്ധതിയുണ്ടോ?	ഉണ്ട് / ഇല്ല

3.4 സാങ്കേതിക സംയോജനം

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
13	ഉരുൾപൊട്ടൽ മുന്നറിയിപ്പുകളും അലേർട്ടുകളും സമയബന്ധിതമായി നിങ്ങൾക്ക് ലഭിക്കുന്നുണ്ടോ?	ഉണ്ട് / ഇല്ല
14	മണ്ണിടിച്ചിൽ വിവരങ്ങൾ ആശയവിനിമയം നടത്താനും സ്വീകരിക്കാനും ടിവി / റേഡിയോ / മൊബൈൽ പോലുള്ള ഉപകരണങ്ങൾ നിങ്ങളുടെ പക്കലുണ്ടോ?	ഉണ്ട് / ഇല്ല
15	മണ്ണിടിച്ചിൽ സംബന്ധിച്ച് ഉള്ള വിവരങ്ങൾ ലഭിക്കാൻ നിങ്ങൾക്ക് ഇന്റർനെറ്റ് കണക്റ്റിവിറ്റി ഉണ്ടോ?	ഉണ്ട് / ഇല്ല
16	മണ്ണിടിച്ചിൽ അടിയന്തിരാവസ്ഥകളെക്കുറിച്ച് റിപ്പോർട്ട് ചെയ്യാനോ അപ്ഡേറ്റുകൾ നേടാനോ സോഷ്യൽ മീഡിയ/ സമൂഹമാധ്യമ പ്ലാറ്റ്ഫോമുകൾ എങ്ങനെ ഉപയോഗിക്കാമെന്ന് നിങ്ങൾക്കറിയാമോ?	ഉണ്ട് / ഇല്ല

3.5 സാഹചര്യങ്ങളോട് പൊരുത്തപ്പെടാനുള്ള ശേഷി

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
17	മണ്ണിടിച്ചിൽ അടിയന്തിരാവസ്ഥയെ നേരിടാൻ നിങ്ങൾ ശാരീരികമായി തയ്യാറാണെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?	ഉണ്ട് / ഇല്ല
	മണ്ണിടിച്ചിൽ അടിയന്തിരാവസ്ഥയെ നേരിടാൻ നിങ്ങൾ മാനസികമായി തയ്യാറാണെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?	ഉണ്ട് / ഇല്ല
18	മണ്ണിടിച്ചിൽ അടിയന്തിരാവസ്ഥയെ നേരിടാൻ നിങ്ങളുടെ കുടുംബാംഗങ്ങളെല്ലാം ശാരീരികമായി തയ്യാറാണെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?	ഉണ്ട് / ഇല്ല
	ഉരുൾപൊട്ടൽ അടിയന്തിരാവസ്ഥയെ നേരിടാൻ നിങ്ങളുടെ കുടുംബാംഗങ്ങളെല്ലാം മാനസികമായി തയ്യാറാണെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?	ഉണ്ട് / ഇല്ല
19	മണ്ണിടിച്ചിൽ അടിയന്തിര സമയത്ത് ആവശ്യമെങ്കിൽ നിങ്ങളുടെ വീട് ഒഴിപ്പിച്ച് സുരക്ഷിതമായ സ്ഥലത്തേക്ക് മാറാമെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?	ഉണ്ട് / ഇല്ല
20	മണ്ണിടിച്ചിൽ അടിയന്തിരാവസ്ഥയ്ക്കായി നിങ്ങൾക്ക് എപ്പോഴെങ്കിലും ഏതെങ്കിലും തരത്തിലുള്ള മോക്ക് ഡ്രില്ലുകൾ ലഭിച്ചിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല

വിഭാഗം 4: സാമൂഹിക പങ്കാളിത്തം

4.1 സാമൂഹിക സംയോജനം

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
21	ഉരുൾപൊട്ടൽ അടിയന്തിര ഘട്ടത്തിൽ നിങ്ങൾക്ക് സഹായം ലഭിക്കാൻ കഴിയുന്ന ഏതെങ്കിലും വ്യക്തിയുടെ (ബന്ധുക്കൾ / അയൽവാസികൾ /) അടിയന്തിര സമ്പർക്ക വിവരങ്ങൾ നിങ്ങളുടെ പക്കലുണ്ടോ?	ഉണ്ട് / ഇല്ല
22	ഏതെങ്കിലും അടിയന്തിര സാഹചര്യങ്ങളിൽ നിങ്ങളുടെ സമൂഹത്തിൽ നിന്ന് ഏതെങ്കിലും തരത്തിലുള്ള സഹായം (സേവനങ്ങൾ / സാധനങ്ങൾ) നിങ്ങൾക്ക് ലഭിച്ചിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
23	ഉരുൾപൊട്ടലുമായി ബന്ധപ്പെട്ട വിവരങ്ങൾ നിങ്ങൾ നിങ്ങളുടെ സമൂഹവുമായി പങ്കിടാറുണ്ടോ?	ഉണ്ട് / ഇല്ല
24	നിങ്ങളുടെ അയൽക്കാരുമായി മണ്ണിടിച്ചിൽ അപകടസാധ്യതകളും തയ്യാറെടുപ്പ് പദ്ധതികളും ചർച്ച ചെയ്യുന്നത് നിങ്ങൾക്ക് സുഖകരമാണോ?	ഉണ്ട് / ഇല്ല

4.2 സാമൂഹിക ഇടപഴകൽ

SNO.	ചോദ്യങ്ങൾ	പ്രതികരണങ്ങൾ
1	കഴിഞ്ഞ 12 മാസത്തിനുള്ളിൽ ഡ്രില്ലുകൾ, മീറ്റിംഗുകൾ അല്ലെങ്കിൽ പരിശീലന പരിപാടികൾ പോലുള്ള സാമൂഹിക മണ്ണിടിച്ചിൽ തയ്യാറെടുപ്പിനുള്ള ഏതെങ്കിലും സംരംഭങ്ങളുടെ ഭാഗമായിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
2	നിങ്ങളുടെ പ്രദേശത്തെ ഏതെങ്കിലും ദുരന്ത നിവാരണ സംരംഭങ്ങളെക്കുറിച്ച് നിങ്ങൾക്ക് അറിയാമോ?	ഉണ്ട് / ഇല്ല
3	നിങ്ങളുടെ സമൂഹത്തിൽ ദുരന്ത വാർത്തകൾ പതിവായി പങ്കിടുന്ന ഏതെങ്കിലും സജീവ ആശയവിനിമയ ചാനലുകളെക്കുറിച്ച് (ഉദാഹരണത്തിന്, സോഷ്യൽ മീഡിയ പ്ലാറ്റ്ഫോമുകൾ / അയൽപക്ക അലേർട്ടുകൾ) നിങ്ങൾക്ക് അറിയാമോ?	ഉണ്ട് / ഇല്ല
4	ദുരന്ത സാധ്യത കുറയ്ക്കുന്നതിനുള്ള ഏതെങ്കിലും സാമൂഹിക സംരംഭങ്ങളിൽ നിങ്ങൾ ഉൾപ്പെട്ടിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല

5	നിങ്ങളുടെ പ്രദേശത്ത് ദുരന്ത സാധ്യത കുറയ്ക്കുന്നതിനുള്ള പരിശീലന സെഷനുകൾ ക്രമീകരിക്കുന്ന ഏതെങ്കിലും സാമൂഹിക സംഘങ്ങളെ നിങ്ങൾക്ക് അറിയാമോ?	ഉണ്ട് / ഇല്ല
6	മണ്ണിടിച്ചിലിന് ശേഷം നിങ്ങൾ എപ്പോഴെങ്കിലും നിങ്ങളുടെ പ്രദേശത്തെ രക്ഷകേന്ദ്രങ്ങളിൽ പോയിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
7	ഇല്ലെങ്കിൽ, അതിനുള്ള കാരണം വ്യക്തമാക്കാമോ	ദീർഘദൂര ദുരന്ത ദുർബലമായ പാർപ്പിടം മറ്റുള്ളവ (വ്യക്തമാക്കുക).....
8	നിങ്ങളുടെ പ്രദേശത്തെ ദുരന്ത സാധ്യത കുറയ്ക്കുന്നതുമായി ബന്ധപ്പെട്ട് പ്രാദേശിക അധികാരികളുമായോ ദുരന്ത നിവാരണ ടീമുകളുമായോ നിങ്ങൾ എപ്പോഴെങ്കിലും ആശയവിനിമയം നടത്തിയിട്ടുണ്ടോ?	ഉണ്ട് / ഇല്ല
9	ഉണ്ടെങ്കിൽ, നിങ്ങളുടെ പ്രദേശത്തെ ദുരന്ത സാധ്യത കുറയ്ക്കുന്നതുമായി ബന്ധപ്പെട്ട് പ്രാദേശിക അധികാരികളുമായോ ദുരന്ത നിവാരണ ടീമുകളുമായോ നിങ്ങൾ എത്ര ഇടവിട്ട് ആശയവിനിമയം നടത്താറുണ്ട്?	☐ 1. അപൂർവ്വമായി ☐ 2. ഇടയ്ക്കിടെ ☐ 3. പതിവായി
10	നിങ്ങളുടെ പ്രദേശത്ത് നടത്തുന്ന ഏതെങ്കിലും സാമൂഹിക പരിപാടികളിൽ നിങ്ങൾ സജീവമായി പങ്കെടുക്കാറുണ്ടോ?	ഉണ്ട് / ഇല്ല

5. ഈ തയ്യാറെടുപ്പുകൾക്കെല്ലാം പുറമെ, മണ്ണിടിച്ചിലിനെതിരായ മുൻകരുതലായി നിങ്ങൾ മറ്റെന്തെങ്കിലും ചെയ്യുന്നുണ്ടോ?

ANNEXURE – V

The updated B. G. Prasad's scale for 2024 is calculated using the formula:

New value = Multiplying factor (1.389) × Old value from 1961 × Linking factor between 1960 and 1982 × Linking factor between 1982 and 2001 × Linking factor between 2001 and 2016, where the multiplying factor = current index value for January 2024 (138.9) [available from Ministry of Labour Bureau]/Base index value in 2016 (100).

Updated B. G. Prasad Scale using CPI-IW January 2024:

Social Class	Per Capita Income (Rupees per month)
Class I	≥9130
Class II	4565 to 9129
Class III	2739 to 4564
Class IV	1369 to 2738
Class V	<1369

Source: Indian Journal of Pediatrics (June 2024) 91(6):643
<https://doi.org/10.1007/s12098-024-05131-z>

ANNEXURE-VI

Photos of households and surrounding areas in the ecologically sensitive zones of Wayanad district



Fig 6.1: A household in the Chembra ward of Meppadi grama panchayath.



Fig 6.2: Settlements near Plantations of Meppadi Grama panchayath



Fig 6.3: Households in Pozhuthana Grama panchayath



Fig 6.4: Anganwadi in Pozhuthana grama panchayath



Fig 6.5: Settlement areas in Vythiri Grama panchayath

ANNEXURE-VII



श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेन्द्रम
तिरुवनन्तपुरम - ६९५०११, केरल, इंडिया
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM
 Thiruvananthapuram - 695 011, Kerala, India
 (An Institute of National Importance under Govt. of India)

Grams : Chitramet, Phone : +91-471-2443152, Fax : +91-471-2550728 / 2446433, E-mail : sct@sctimst.ac.in, Website : www.sctimst.ac.in

Institutional Ethics Committee

CDSCO Registration No: ECR/189/Inst/KL/2013/RR-24
 DHR Registration No: EC/NEW/INST/2022/2775

SCT/IEC/2334/DECEMBER/2024

17.01.2025

Dr. Reshma N Babu
 MPH Student, AMCHSS
SCTIMST, Thiruvananthapuram

Dear Dr. Reshma N Babu,

The Institutional Ethics Committee held on 30th December, 2024, reviewed and discussed your application to conduct the study titled "HOUSEHOLD DISASTER PREPAREDNESS AND ASSOCIATED FACTORS IN THE ECOLOGICALLY SENSITIVE ZONES OF WAYANAD DISTRICT, KERALA" (IEC /2334) .

Principal Investigator	Dr. Reshma N Babu, MPH Student, AMCHSS, SCTIMST
Co-Principal Investigator(s)	Dr. Manju Nair R, Scientist D, AMCHSS, SCTIMST
Duration of the study	6 months

The following members of the Ethics Committee were present at the meeting held on 30th December, 2024

SL. No.	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation with Institution(s)
1.	Dr. Manoj Murhekar	MD (Preventive & Social Medicine)	Male	Social Scientist	No
2.	Dr. Annapurna.Y	MD	Female	Basic Medical Scientist	No
3.	Adv. Priya Kaimal	LLM, MBL	Female	Legal Expert	No
4.	Dr. Indu PV	MBBS, DPM, MPhil, PhD	Female	Clinician	No
5.	Dr. Rejnish Kumar	MBBS, MD, DNB	Male	Clinician	No
6.	Smt. Rekha Radhakrishnan	M.A (Eng.): B.Ed	Female	Lay person	No
7.	Dr. Biju Soman	MBBS, MD, DPH, MSc, DLSHTM	Male	Basic Medical Scientist	Yes
8.	Dr. Syam K	MBBS, MD, DM	Male	Clinician	Yes
9.	Dr. Srinivas G	PhD	Male	Basic Medical Scientist (Member Secretary)	Yes

The following documents were reviewed:

Original submission

1. IEC Application Form
2. Letters for permission
3. Funding details and Budget
4. Covering letter addressed to the Chairperson, IEC, SCTIMST dated 09.12.2024 forwarded by HOD
5. Interview schedule in English and Malayalam
6. Informed Consent Forms in English and Malayalam
7. Participant Information Sheets in English and Malayalam
8. Checklist Form
9. Proposal
10. Declaration Form
11. CV of PI and Co-PI

Revised submission

1. Covering letter addressed to the Member Secretary, IEC, SCTIMST dated 10.01.2025 with response to IEC comments
2. IEC recommendation letter dated 09.01.2025
3. Proposal
4. Participant Information Sheets in English and Malayalam
5. Informed Consent Forms in English and Malayalam
6. Interview schedule in English and Malayalam
7. Permission letters

IEC Decision

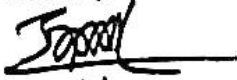
The IEC approved the conduct of the study in the present form.

Remarks:

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team / Guide who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,



Dr. G. Srinivas
Member Secretary, IEC

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE (IEC)
SCTIMST, THIRUVANANTHAPURAM



ANNEXURE – VIII



MEPPADI GRAMA PANCHAYAT

Meppadi(p.o), 673577(pin), Wayanad, ph: 04936282422
meppadidisaster@gmail.com www.lsgkerala.in/meppadipanchayath
ISO Certified Institution

Date: 11/12/2024

From

President
Meppadi Grampanchayat
Meppadi (PO)
Wayanad.

To,

Dr Biju Soman,
MD, DPH, MBBS, MSc, DLSHTM
Professor & Head,
Achutha Menon Centre for Health Science Studies,

Subject: Permission and Support for the Study on "Disaster Preparedness and Associated Factors in the Ecologically Sensitive Areas of Wayanad District, Kerala"

Dear Dr Biju Soman,

Greetings from Meppadi Grama Panchayat.

We acknowledge receipt of your letter regarding the study titled "Disaster Preparedness and Associated Factors in the Ecologically Sensitive Areas of Wayanad District, Kerala," proposed by Dr. Reshma N. Babu, MPH student at AMCHSS.

We understand that the study aims to explore critical factors influencing disaster preparedness in the ecologically sensitive areas of Wayanad. This is indeed a matter of significance to our region.

The Panchayat is pleased to extend its support to facilitate the study in our jurisdiction. We recommend Dr. Reshma N. Babu coordinate with the respective ward members and community representatives to ensure smooth communication and participation of the identified households. Additionally, we request adherence to ethical practices and the confidentiality of the participants as per the guidelines stated by your Institutional Ethics Committee.

We wish Dr. Reshma N. Babu and your team success in this important research endeavor.

Sincerely,

PRESIDENT
MEPPADI GRAMA PANCHAYAT





**POZHUTHANA GRAMA PANCHAYAT OFFICE
(ISO 9001:2015)**

**Pozhuthana P. O,
Wayanad- 673575, Kerala
Phone: 04936-255251**

Email: pozhuthanagp@gmail.com
www.lsgkerala.in/pozhuthanapanchayat

Date: 17.12.2024

No: P8-2024

President
Pozhuthana Gramapanchayat

Dr Biju Soman,
MD, DPH, MBBS, MSc, DLSHTM
Professor & Head,
Achutha Menon Centre for Health Science Studies,

Sir,

Subject: Permission and Support for the Study on "Disaster Preparedness
and Associated Factors in the Ecologically Sensitive Areas of
Wayanad District, Kerala"

Dear Dr Biju Soman,

Greetings from Pozhuthana Gramapanchayat. We acknowledge receipt of your letter regarding the study titled "Disaster Preparedness and Associated Factors in the Ecologically Sensitive Areas of Wayanad District, Kerala," proposed by Dr. Reshma N. Babu, MPH student at AMCHSS.

We understand that the study aims to explore critical factors influencing disaster preparedness in the ecologically sensitive areas of Wayanad. This is indeed a matter of significance to our region.

The Panchayat is pleased to extend its support to facilitate the study in our jurisdiction. We recommend Dr. Reshma N. Babu coordinate with the respective ward members and community representatives to ensure smooth communication and participation of the identified households. Additionally, we request adherence to ethical practices and the confidentiality of the participants as per the guidelines stated by your Institutional Ethics Committee.

For any local assistance, you may reach out to the Panchayat office at Phone No: 04936-255251 and email: pozhuthanagp@gmail.com

We wish Dr. Reshma N. Babu and your team success in this important research endeavor.



Sincerely,

Anas Rosna Stephy
President
Pozhuthana Grama Panchayat



THIRUNELLI GRAMA PANCHAYAT OFFICE

(ISO 9001-2015)

KARTIKULAM PO, WAYANAD, KERALA, PHONE: 04935-250453

e-mail: thirunelligp@gmail.com

Date 20/12/2024

President
Thirunelli Gramapanchayat

Dr. Biju Soman,
MD, DPH, MBBS, MSc, DLSHTM
Professor & Head,
Achutha Menon Centre for Health Science Studies,

Sir,

Subject: Permission and Support for the Study on "Disaster
Preparedness and Associated Factors in the Ecologically
Sensitive Areas of Wayanad District, Kerala"

Dear Dr Biju Soman,

Greetings from Thirunelli Gramapanchayat. We acknowledge receipt of your letter regarding the study titled "Disaster Preparedness and Associated Factors in the Ecologically Sensitive Areas of Wayanad District, Kerala," proposed by Dr. Reshma N. Babu, MPH student at AMCHSS.

We understand that the study aims to explore critical factors influencing disaster preparedness in the ecologically sensitive areas of Wayanad. This is indeed a matter of significance to our region.

The Panchayat is pleased to extend its support to facilitate the study in our jurisdiction. We recommend Dr. Reshma N. Babu to coordinate with the respective ward members and community representatives to ensure smooth communication and participation of the identified households. Additionally, we request adherence to ethical practices and the confidentiality of the participants as per the guidelines stated by your Institutional Ethics Committee.

For any local assistance, you may reach out to the Panchayat office at Phone No: 04935-250453 and email: thirunelligp@gmail.com

We wish Dr. Reshma N. Babu and your team success in this important research endeavor.

Sincerely, 



Valsalakumari

Vice President

Thirunelli Grama Panchayat



VYTHIRI GRAMA PANCHAYATH OFFICE

(An L.S.O 9001:2015 Certified Office)

VYTHIRI. P.O, WAYANAD, PIN- 673576 PHONE - 04936-255223

vythirigramapanchayath@gmail.com www.lsgkerala.in/vythiripanchayat/

16.12.2024

From,
President
Vythiri Gramapanchayat
Vythiri PO
Wayanad

To,
Dr. Biju Soman
MD,DPH, MBBS, MSc, DLSHTM
Professor & Head,
Achutha Menon Centre for Health Science Studies.

Subject: Permission and support for the study on "Disaster preparedness and associated factors in the ecologically sensitive areas of Wayanad District, Kerala".

Dear Dr Biju Soman,

Greetings from Vythiri Gramapanchayat.

We acknowledge receipt of your letter regarding the study titled to "Disaster preparedness and associated factors in the ecologically sensitive areas of Wayanad District, Kerala" proposed by Dr. Reshma N Babu, MPH student at AMCHSS.

We understand that the study aims to explore critical factors influencing disaster preparedness in the ecologically sensitive areas of Wayanad. This is indeed a matter of significance to our region.

The panchayat is pleased to extend its support to facilitate the study in our Jurisdiction. We recommend Dr Reshma N Babu coordinate with the respective ward members and community representatives to ensure smooth communication and participation of the identified households. Additionally, we request adherence to ethical practices and the confidentiality of the participants as per the guidelines stated by your institutional ethics committee.

We wish Dr. Reshma N Babu and your team success in this important research endeavour.



Sincerely,

VIJESH M.V
PRESIDENT
VYTHIRI GRAMA PANCHAYAT
VYTHIRI P O, WAYANAD
Mobile 9496048336

ANNEXURE – IX

Household disaster preparedness and associated factors in the ecologically sensitive zones of Wayanad district, Kerala

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