

Assessing Disaster Preparedness among Schools in Trivandrum District

MSW DISASTER MANAGEMENT

2024- 2026

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ABSTRACT

Schools are highly vulnerable during disasters, yet their preparedness is often assumed rather than assessed. This study examined the level of disaster preparedness among schools in Trivandrum district, Kerala, focusing on four specific objectives: the involvement of school authorities, the availability and condition of emergency plans, the receipt and use of early warning information, and the physical safety of non-structural building elements. A quantitative, cross-sectional design was adopted, using a structured questionnaire administered through Google Forms to one teacher from each of 66 randomly selected government, aided, and private schools across coastal, near-coastal, plain, and hilly terrain. Data were analysed using descriptive statistics and cross-tabulation in SPSS.

Findings show that 51.5 percent of schools have a Disaster Management Plan, which strongly predicts an inclusive committee of internal stakeholders, though external agencies such as Fire and Rescue Services (55.9%) and Civil Defence Wardens (32.4%) remain the least represented even where a plan exists. Emergency plans were present but in poor condition in 63.6 percent of schools, absent in 24.2 percent, and both present and well-maintained in only 12.1 percent. Early warning systems showed the weakest performance overall: 62.1 percent of schools never receive official hazard warnings, 69.7 percent of staff do not know the required response actions, and only 1.5 percent of schools always activate their evacuation plan after a warning is received. Non-structural safety was comparatively stronger, with an average compromise rate of 24.4 percent across the 34 items assessed, though disaster-response-specific equipment such as stretchers, emergency exit signage, and temporary shelters was notably weaker than everyday classroom furnishings and utilities.

The study concludes that disaster preparedness in Trivandrum schools has been substantially adopted on paper but remains only partially operational in practice. Strengthening the early warning-to-action chain, maintaining existing emergency plans, and improving the availability of disaster-specific response equipment emerge as the most urgent priorities for future intervention.

Keywords: disaster preparedness, schools, emergency plans, early warning systems.

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CHAPTER 1

INTRODUCTION

Assessing Disaster Preparedness among Schools in Trivandrum District

1.1 Introduction

Disasters are highly destructive events and will result lose of life, infrastructure, functioning of the society will also be disrupted. There are four phases in disaster management : mitigation, preparedness, responds and recovery. Mitigation and preparedness are the pre-disaster actions to be done. The Preparedness is “the knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.” (Terminology on Disaster Risk Reduction, 2017)

Children are the most vulnerable in disasters directly or in directly it is affecting them lifetime. Along with this the infrastructure also get disrupted due to the acute situation caused by disaster. School is the best place children learn skills and practical experience in the disaster preparedness. (Seddighi Hamed, 2020). As due to climate change and rapid urbanization the probability of disasters are increasing world-wide and as along with this location of schools in the disaster-prone area and lack of knowledge of students and teachers are present which make them vulnerable. Students are the network links that connects with family as well as community. The awareness and disaster preparedness in schools helps students to gain more knowledge about disaster risk reduction and so their active participation and effort leads to disaster risk reduction which will be helpful for the community. The inclusion criteria for the risk reduction with models, practices, and also with indigenous knowledge are that local and Indigenous communities must be meaningfully involved in the design, implementation, monitoring, and evaluation of risk-reduction interventions, and that the knowledge systems used must be culturally appropriate, ethically sourced, and demonstrably relevant to the local hazard context (Tyas Rizki Arumning, 2025). There will be behavioural changes in students if contribute the knowledge of disaster and thus this contribute a community responsibility to students. Through achieving the preparedness in the school will promote the school institution and future generation towards sustainable development goals 2030, so promotion of the disaster preparedness will equip school preparedness and students preparedness (Li , Han, & Wang , 2023).

Readiness in the children will make the post disaster loses get reduced (Seddighi Hamed, 2020). As the per the tenth five year plan (2002-2007) as per that promote national wide preparedness for both natural and man made disasters and concern for the school buildings

which is prone to risk so the inclusion of subject on disaster management is taken by the CBSE in 2002, and brought up in curriculum for the class 8, 9 and 10 focussing revised, updated and relevant practical practices. The National School Safety Policy Guidelines apply to all schools irrespective of their location, body of school, the safety and security of school students, teachers, stakeholders close to the school and community members should be certain (Ahmad & Goswami, October 2025). The importance of community towards reducing disaster risk will also create local institutions to follow community based disaster risk management and this will promote activities like assessing risk, local strategies, resource allocation and assessing vulnerability will emphasize the preparedness in disasters (Dowlati, Marzban, & Marzaleh, 18 December 2025).

The children in disaster have also reported experienced in child trafficking and overall this will affect the functioning of the society. The United States have found that raising the awareness of the children is like create a strong pillar in children readiness. (Seddighi Hamed, 2020). Before 2005, for disaster risk reduction there were no global standards of education and was fully fragmented to local standards but after the Hyogo framework in action after 2005 have made support for educating in formal and informal and capacity building to the teachers and community level risk reduction practices which was the first integration marked (Ahmad & Goswami, October 2025). In addition, Sendai framework for disaster risk reduction (2015-2030) have also strengthened the inclusive and integrated education support system for resilience building to the education sector (Tias Rizki Arumning, 2025). The educating students include the expressing of empathy, togetherness and philanthropy in the acute situation like disasters.

Most of the interventions which have taken for disaster preparedness were defined and set for adult (Seddighi Hamed, 2020). There is no systematic review or studies conducted to identify the methods and challenges for preparedness in school (Seddighi Hamed, 2020). The Sendai framework added measurable aims and integrate departments in the education sector including the support from policies, moreover, there is identifying trained teachers in the school. There are interventions or level assessed on the teachers and students but nothing on about programmes and activities that could bring the disaster risk reduction (Tias Rizki Arumning, 2025).

The study of assessing the disaster preparedness in the schools will get to know about the preparedness of the each school in the very different land area. The objectives of the study

involves to assess the involvement of school authorities in disaster preparedness so through that get an understanding about the activities that initiated by the school authorities and integration of various departments participation over the risk reduction activities. The next objective is to examine the emergency plans in schools by assessing the preparedness plans and actions that the school do annually and the condition of activities. The third objective examines how early warning information related to hazards is received, understood, and acted upon within schools, so through that how much dissemination of information in schools could be identified. For assessing the physical safety condition of the non structural elements will ensure the safety and security of arrangement within the school that create additional vulnerability. The study all along will create an understanding about the how much prepared by each school in Trivandrum district for disasters and this is also a risk reduction method that we community do consider for our future generation.

1.2 Significance of the study

Disaster Risk Reduction (DRR) management is vital across all sectors as it helps reduce risks to people and property. Among different population groups, children are considered one of the most vulnerable categories during disasters. Therefore, preparedness planning and proper allocation of resources for children are crucial for their safety, protection, and sustainable development. Maintaining disaster management plans and following protocols established under the Disaster Management Act, 2005 and the National School Safety Policy Guidelines, 2016 can strengthen preparedness across schools in India.

Schools are a high-setting because they are daily mass-gathering sites, and educational institutions are explicitly responsible for protecting children from multi-hazard risks (Horton , Spigelmyer, Zoucha, & Rebmann , 2023), Trivandrum experienced heavy rainfall and strong winds with widespread damage in 2018 and 2019, and waterlogging reportedly occurs 3 to 6 times each monsoon and The city's flood problem is tied to drainage failure, including absent, poorly built, or blocked drains and overflow from contaminated canals with reduced carrying capacity (Hussain).

A Trivandrum disaster-preparedness study is also justified because disasters create psychosocial harm, not only physical damage. Among Ockhi-affected adults in coastal Trivandrum, 65% still had PTSD after 3 months (Fredy, Sreekumar, Suchithra, & Kuruvilla, 2019).

The state is increasingly on the front lines of severe climate shifts, facing everything from sudden floods and landslides to intense lightning storms. Focusing directly on this challenge, by assessing the actual disaster preparedness of schools in Thiruvananthapuram to ensure these emergency plans don't just sit on a shelf as theoretical ideas. Instead, the goal is to make sure schools are actually ready to act, buildings are structurally safe, evacuation routes are crystal clear, and children with special needs aren't left behind

Kerala is highly vulnerable to disasters such as floods, landslides, lightning, heavy rainfall, and coastal hazards. Schools in Trivandrum are not facing one uniform hazard profile, because the district includes a 75–78 km coast, dense coastal settlement, river systems, canals, and low-lying urbanized areas (Shaji, 2021) so understanding the present condition and challenges faced by schools in Kerala is important for strengthening disaster preparedness and ensuring a supportive and safe learning environment for students. Schools also function as relief camps during emergencies, making it necessary to assess whether they are structurally safe and operationally prepared for such responsibilities.

This study aims to assess how schools in Trivandrum district are managing disaster risks, what safety measures are currently in place, and how aware school authorities and staff are regarding emergency situations. The study seeks to understand the present status of disaster preparedness in schools and examine how disaster risk reduction strategies are being implemented within educational institutions. The findings of the study may help schools, policymakers, disaster management authorities, and educational institutions identify preparedness gaps and strengthen school safety mechanisms in the district.

1.3 Statement of the problem

Children are one of the most vulnerable groups during disasters; therefore, including them in preparedness and mitigation measures is crucial for effective disaster risk reduction. The absence of disaster management plans and lack of awareness among children can result in delayed response during emergency situations. Although disasters cannot always be predicted, failure to prepare increases both the risk and impact of disasters. Since children represent the future generation, ensuring their safety and preparedness is essential.

Recent incidents reported across Kerala highlight the risks associated with inadequate preparedness and safety measures in schools. A 13-year-old student was electrocuted at

Thevalakkara Boys High School in Kollam district on July 17, 2025 (The Hindu, July 17,2025). Similarly, a portion of an old structure of Government KMUP School, Eroor in Ernakulam district collapsed during heavy rainfall on July 27, 2025 (The Hindu , July 28 ,2025). The roof of a building at Government Upper Primary school, Karthikappally in Alappuzha, partially collapsed on Sunday (July 20, 2025) morning. No injuries were reported in the incident (The Hindu, July 20,2025) and 59 students, a teacher injured in Kerala after science experiment explodes (16 Sep 2018, The News Minute). A school van caught fire in Kerala's Ernakulam, School children had a narrow escape as their school van. (India Today, February 3, 2022). Although a major tragedy was avoided because the incident occurred during a holiday, it exposed serious safety concerns regarding school infrastructure and preparedness.

Despite the existence of disaster management guidelines and school safety policies, there is limited information regarding the actual level of preparedness among schools in Trivandrum district. Studies indicate that schools in disaster-prone regions continue to face preparedness gaps, including lack of teacher training, absence of functional disaster management committees, irregular mock drills, and inadequate safety measures. Since schools accommodate a large population of children every day and also function as relief shelters during emergencies, assessing their preparedness capacity is essential. Therefore, this study attempts to examine the disaster preparedness status of schools in Trivandrum district and identify existing gaps in disaster risk reduction practices within educational institutions.

1.4 Objectives

The study mainly focuses on the disaster preparedness of schools and the role of school authorities in disaster risk reduction. It involves the assessment of the implementation of policies and schemes related to school safety and disaster preparedness in connection with the National Disaster Management Authority and other national and international frameworks. The study also seeks to identify the roles, responsibilities, practices, and knowledge of school authorities regarding disaster preparedness and risk reduction. In addition, the study aims to understand the measures adopted by schools to ensure a safe environment for students during emergencies and disasters.

General Objective:

Assessing Disaster Preparedness among Schools in Trivandrum District

Specific Objectives of the Study

- To assess the involvement of school authorities in disaster preparedness.
- To examine the availability and condition of emergency plans in schools.
- To assess how early warning information related to hazards is received, understood, and acted upon within schools.
- To examine the physical safety condition of non-structural elements in school buildings.

1.5 Chapter Scheme

Chapter one: Introduction

This chapter discusses the overview of the research topic, disaster preparedness of the school and its importance of disaster risk reduction in education institutions. Also explains the research problem, significance of the study, objectives of the research and the need for assessing disaster preparedness among the schools in Trivandrum district.

Chapter two: Review of Literature

This chapter studies previous studies and research related to disaster preparedness in school safety, disaster risk reduction, emergency planning and the role of school in educating them. This chapter also examines the state, national and international policy and schemes related to school disaster management and identifies research gap and theoretical foundation of the study.

Chapter three: Research Methodology

This chapter explains the research design, study area, sampling method, source of data, data collection tool and techniques used for data analysis in the study. It also explains the methods adopted for assigning disaster preparedness among schools in Trivandrum district.

Chapter four: Data Analysis and Interpretation

This chapter presents the data collected from the field and analyses through the SPSS software on the preparedness level of the school regarding disaster management and risk reduction. This chapter presenting of tables, charts and interpretation related to the role of school authority in preparedness practice, emergency plan, early warning system etc.

Chapter five: Findings and Conclusion

This chapter summaries the major findings of the study and provides conclusion based on the research objectives. It also include suggestions and recommendation for improving disaster preparedness, school safety measures, and risk identification practices in the schools of Trivandrum district.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The second chapter of the research presents a review of literature based on previous studies, reports, and policy documents related to disaster preparedness among schools and associated aspects of school safety. The reviewed literature is further categorized into State-level, National-level, and International-level studies to provide a comprehensive understanding of the existing knowledge on the subject. The chapter concludes by identifying the research gap and direction for the present study on assessing disaster preparedness among schools in Trivandrum district.

2.2 State Level:

From “A working strategy for preparedness in Kerala schools: A suggestive study” (Kini & Vinod, 2023), The study showed the working strategy for school safety and preparedness in Kerala, and it explained the different hazards affecting Kerala and how they impact schools and children in many ways. The paper totally evaluated 28 schools in Kerala and checked the disaster management plan and got result that the schools have disaster management plan and evacuation maps but they lack in hazard-specific response plans, annual calendars for mock drills, and safety audits. It also highlighted the school safety guidelines that should be carried out across the country for better protection and awareness. The study mainly focused on how schools can follow proper steps to reduce risks and make students more safe during any disaster situation. The need for planning, training and awareness among teachers and students is a crucial support for risk reduction. The decentralisation proposed by the authors is the main highlight, acting with the community involvement such as panchayat and municipalities. Contribution of collaborative models from the side of other like NGO, disaster management authority at district level and youth volunteers. Overall, the study gave a clear picture on why school safety is important.

Thiruvananthapuram district disaster management plan 2015, provides a collective framework with preparedness, responds and recovery with respect to disaster management plan 2005 and Kerala state disaster management policy. The document provided a systematically the disaster profile such as flood, lightning, droughts, epidemics and industrial accidents. Also emphasis on the preceding institutions to support like health, fire force, irrigation and local self government. The district disaster management authority (DDMA) chaired by district collector,

to support preparedness and rehabilitation fund is supported from Chief Minister's disaster relief fund.

The document finds the gaps in system, the centralised system finds absents of clarity in grass root level and community participation and NGO involvement seems stabilised without action and initialisation of activities. The fund support seeking from the externally should be addressed with mobilising local resources. The lack of practical action through the policy can be seen and it will result in practical conditions. (Authority K. S., 2015)

The report from the disaster preparedness and safety training for educational institutions, Idukki says the fragility of the land area in Idukki and risk in chances of the occurrence of landslide, soil erosion and flash food. The place is also vulnerable to the transportation condition and thus create difficulty in respond phase and beside there will difficulty in resource allocation. The report also compare with the situation happened in Nepal and Uttarakhand which shares the same land area situations. The land fragility will turn into human insecurity and thus create the chances of disaster to happen and recovery often makes difficult. The report highlights the strengthening of the Panchayati Raj institutions, schools and NGO for act on front line so could find the interventions in the community level and that could be help for the decentralisation. The framework such as the UNDP have consider the preparedness for the students in the school children is essential and the goal to emphasis the school children preparedness. The school act as both shelter at the time of disaster and additionally, a educating for risk preparedness. By integrating all these things the social, ecological, technological, infrastructure make it more resilient the community. (Authority I. D., 2022-23)

The study is showing that even though schools know about disaster risks, the actual preparedness is still not so good. Many schools not doing regular mock drills and teachers also not getting proper training many times. Only few schools have a working disaster committee which also making the preparedness low. The tools they used was survey form and small interviews for getting information from students and teachers. The method mainly was descriptive, using tables and percentage to explain the findings. The increasing vulnerability in the school institution is mainly due to construction in the hazard zone, the gap in the education institution is also the absents of practical efforts to resist disasters. The presents of practical equipment, irregular mock drill and no practicing of mock drills. The author emphasis to take action in training for teachers, student led campaigns and support from authorities like district disaster management authority. So the highlight in the paper is the bridging the gap between

the policy and the practical actions. Overall the study telling that schools need more regular training and proper safety plans for better disaster readiness. (Chowdhury, July 2025)

2.3 National Level:

Explains about the safe learning environment and education continuity and integration of right to education Act. The right to education act, 2009 is the foundation of the need to have safe and secured environment for the children and if it is denied then it is the denial of educational right act. Supreme Court outlines the safe infrastructure for the students is connected to the right to education act , 2009. Considering the students safety are certain measures such as structural safety and national building codes, and check on the National Building Codes moreover, there are non structural measures that focuses on the daily maintenance of the things like chairs, tables, shelves, fans, air conditioning services, water purifiers services, isolating laboratory chemical hazards, and regulating traffic zones during school dispersal times etc.

The main gap in the system was historically the education was only focused on the education only over and above than providing a practical experience on disaster preparedness so from the past onwards the system have faced a disconnection. Also explains the challenges and action areas, roles and annexure provided tools like templates for DM plan, emergency management plan checklist and evacuation plan. Under the District Disaster Management Authority, the district education officer have to certify the school buildings are properly maintained and followed building code verification. Locally the function is strated up from the school itself by forming a disaster management committee, and appointing of school focal point teachers in charge. This will develop a localised disaster management activity with awareness/ education and practical exposure to the community including the students so this will provide culture of safety. (National Disaster Management Authority (NDMA), 2016)

The Guidelines on School Safety and Security (2021) mainly shows that many schools still not fully follow safety rules, and this create different risks for students. The findings say that accountability of school management is very important because most issues happen when safety steps are not monitored properly. The Guidelines of school safety and security is grounded on the systematic approach with legal support and promote safety of the students all over India irrespective of the management and considering of the structural and management safety measures in the school. Based on this the school has to implement the guidelines provided by the National Disaster Management Authority (NDMA) and support preparedness

plan in according to the site and location of the school. This will create a macro level safety action will be addressed with respective of there own locational vulnerability. This framework relies on local school safety committees, municipal functionaries and community stakeholders to conduct regular safety audits and actions did by the system. The guideline also tell that parents, teachers and students also should involve more in safety discussions. The tools used include laws like JJ Act, POCSO, RTE and safety checklists. The methods used were consultation with experts, reviewing old guidelines and analysing school incidents to make a strong safety framework. (Ministry of Education, 2021)

Ronoh (2017) conducted a study titled “Disability through an inclusive lens: disaster risk reduction in schools”, which focuses on the role of schools in promoting disaster risk reduction (DRR) that includes children with disabilities. The disabled category of children are highlighted in the study as they are the vulnerable group during disasters. The research objective was weather they were included in the preparedness planning and response in disaster management. The study did was a qualitative , multi-case study method and selected two schools in New Zealand. The data collection was through children’s workshop activities, participant observations, semi-structured interviews, photographs, and school policy documents. And used Nvivo software to code and analyse the data and Thematic analysis was used.

Moreover, finding were safe and accessing building facilities for disabled children, involvement of disaster risk reduction activities and planning and creating a culture of participating the parents, teachers and other stakeholders with disabled students in other community activities related to DRR. The study was pointed out the importance of involving of disabled children to plan, decision making and ensuring there participation in drills. And some suggestion were including of DRR related school designs and changing attitudes children with disabilities. The way to treat them and understand and prepare those students is very different from other children. (Ronoh, 2017)

The systematic review of school based disaster risk reduction strategies in India highlights the progress made in education on disaster management shown curriculum development but there is gap in the practice and implementation. Out of 67 studies reviewed between 2000 and 2024 most focused was the curriculum integration. Other themes included online education, attention to disadvantaged students and mental health. Polices such as the Sendai Framework (2015-

2030), Comprehensive School Safety Framework (2022-2030), and Indian National Policy on Disaster Management (2009) provides strong guidance but lacks the practical application.

The result of the study encourages to find practical exposure inclusion not just curriculum. Integration of students practice, teachers training and community engagement. Disability sensitivity, gender based response approach and mental health support are essential for the students to have a better resilient. Safe school infrastructure and community engagement can create a stronger linkage between them and culture of resilient community which could reduce the risk. Overall the literature suggest there are strong policy for Indian disaster management but need more research and practical oriented collaborations. (Goswami & Ahmad, 2025)

According to the systematic review from the “Virtual reality training programs in disaster preparedness: a systematic review” states that in hospital disaster preparedness training should be done in live drills, tabletop exercises, and functional demonstration but there are constraints to use it may bring consequences to the patient care and limited participation scope. Virtual Reality has now become an alternative that can replicate hazardous scenarios.

The review evidenced from eight studies published from 2010 to 2022 from most conducted from the country the United States and China, the primary participants were the nurses of the hospital. The findings constitute that VR participation enhanced the knowledge, performance, confidence, and satisfaction among healthcare workers and there are also gaps like small sample and reliance on self reported measures and lack of long term generalisation. As economically also it have advantages even doing on live mock drills and additionally reduces the risk. Even in VR there are certain risk elements like cyber sickness, accessibility barriers. Overall, VR hold a new preparedness practice for disaster risk and which is more robust methodology and standardised things for future are expected. (Kaggwa, Chaimowitz, Agboinghale, Marginean, & Olagunju, 2025)

2.4 International Level:

Disaster Risk Reduction (DRR) policy is implemented in schools in Lao PDR mainly focusing on fire safety. The researchers used interviews, document review, school observation and student survey to understand the implementation. The implementation of the disaster risk reduction in developing and underdeveloped countries faces complex issues in implementing it. There is no certain laws to integrate with all the departments and works assigned to do by the each people like the provincial and disaster management committees.

The main problem turned into is the lack of money and availability of updated and quality equipment and training of teachers in disaster safety. When local leaders have a strong management and assigning of proper task to each department according to there capability are some safety effort. Regarding the money the finds were thinking of to the creation of new fund raising program for partnering privet business and community emergency fund. Adding disaster safety lessons in school curriculum can improve there ability to understand and moreover, the initiation of NGO support to the school activity for teaching disaster practical like what to do during emergencies.

Over and above there is a gap which is there are plans and trainings what to do during disasters or emergencies but no activities or actions taken for preventing. So there is an emergency to update curriculum and bring different sectors integrate the task for each of them. Schools did DRR classes and kept assembly point, and students knew more about fire response but less on fire prevention. Overall, strong leadership helped, showing the need for clear mandate and better training. (Kanyasan, et al., 2018)

“Disaster management, psychological preparedness, and disaster resilience in public schools: basis for designing school-based disaster risk reduction management program” a research paper states the schools in high risk in Mauban South District that disaster resilience cannot fully depend or solely on physical logistics or infrastructure. Instead the vital thing is the deeply depended on the psychological preparedness. The psychology readiness is connected to the preparedness and the visibility of the preparedness make them safeguard and even the early warning system are visibly in place.

The self emotional regulation and external environment can capable of reading the natural changes like climate change and the sudden changes happens in the area. The school disaster resilience program uniformly rated as very capable and the primary actions taken by the funds from maintenance and other operation expenses and local government units supported. The result showed that when schools have good disaster plans and teachers are prepared mentally, it helps the school to be more ready and strong during emergencies. It also shows that psychological preparedness can be checked to know how much teachers and students are ready to face disasters and how to support them better. (Alpuerto & Briones, 2025)

Ronan, Alisic, Towers, Johnson, and Johnston (2015) conducted a comprehensive review of disaster preparedness research focusing on children and families. As a critical review article

this states about the understanding disasters by the children and what they mean to preparedness for disasters. Systematically review literature of disaster preparedness for children and among them one third delivered how the programs were delivered. Around 70 percent of the children showed a positive response to knowledge, attitude and preparedness. Also suggesting to need of good research methodologies and large amount of sample and solutions for the area.

Another focuses is on the how well understood by the children and how they practically do what they learned is also a concern so the implementations of practical learning should also be settled up. Moreover, the spreading of knowledge towards other from the children is also important and thus means that sharing of what learned to there parents and community. The practical learning had experienced reducing of children anxiety. In Japan, school conducted regular mock dillls compared to other schools who didn't resulted a difference in the rescue rate and the school conducted regular drills had only small number in deaths and injuries.

The children interest make it more effective like the child may be interested in the field so the implementation make it more flexible and that attitude also helps to progress in educating children awareness. Additionally, the children need both mental and physical preparedness and build resilience to save lives of the themselves and also to save the lives of the community in the future this will make a culture for disaster management. (Ronan, Alisic, Johnson, & Towers, 2015)

Petal, Pelling, Barcena, and Gitay (2008) discussed the integration of disaster risk reduction into education systems. The authors explains about from the early age children gaining about preparedness will create a culture of safe measures importance in there lifestyle. The research in this field which is emerging and the late 19th century the locally made the brochures and lesson plans made and this was small scale early efforts by some some technical experts.

Then the field expanded to the International Decade of Natural Disaster Reduction (IDNDR) and later to Hyogo framework for action. In modern disaster education there has happened a shift from the disaster are inevitable. The act of post disaster is not appreciated in the article and relaying on pre-disaster mitigation is necessary. To bridge the gap between the scientific knowledge and action there are three pillars, the individual, neighbourhood or organisation and policy, these are interdependent.

Additionally, the suggested of adding school curriculum and time schedule that stand beside the courses and another one is community outreach program such as campaigns. There are two terms in this paper pre-contemplation which means not thinking about a disaster as a problem, next term is contemplation where do something after finding out a problem or a hazard, this is a stage of understanding or education that the people have on disaster's risk. The review based approach made only a conceptual expression of the importance disaster risk reduction among the children in school. The inclusion of curriculum and the training of children will ensure safety on children and for community. (Petal, 2008)

Assessment of School Resilience in Disasters: A Cross-Sectional Study by Samaneh Mirzaei, Hossein Falahzade, Leila Mohammadinia, Khadijeh Nasiriani, Abbas Ali Dehghani Tafti, Zohreh Rahaei, and Hamid Reza Amiri.(2020) studied how resilient schools are to disasters in Yazd, Iran. Authors explains about the infrastructure distraction happen by the past disasters. The importance of considering the school resilience in disaster because the school play an important role before, during and after the disasters.

Resilience on schools here means reducing risk and being prepared for the diaster to cope. Like international Framework Hyogo and others shown interests in building resilient building. Each place need there on culture and management tools for resilience. This study used a descriptive-analytic cross-sectional design. It was conducted in 400 schools in Yazd, central Iran, during 2018, with 367 participants who completed the questionnaire.

Data were collected using the School Resilience in Disasters (SRD) Questionnaire, developed by the researchers through a systematic review and qualitative study with 24 disaster experts. Data were analyzed using SPSS Version 22 with descriptive statistics, independent t-tests, one-way ANOVA, and Pearson correlation coefficients to identify relationships between variables. The resilience against the disasters are connected primarily to the geographical location and its infrastructure management. The urban planning and Policy implementation regarding the construction also under reducing disaster risk. (Mirzaei, et al., 2020)

Looking Back and Beyond Sendai: 25 Years of International Policy Experience on Disaster Risk Reduction by Sálvano Briceño (2015) explains how disaster risk reduction (DRR) has developed over 25 years of global cooperation. The author highlights that while knowledge on disasters has improved, many countries still focus more on responding to hazards rather than reducing vulnerability before disasters happen.

The paper discusses the progress made since the Hyogo Framework for Action (2005–2015) and how it helped shape the Sendai Framework for Disaster Risk Reduction (2015–2030). Policies and actions often emphasize natural hazards but ignore the social and economic vulnerabilities that make people more at risk. The study says that risk reduction must go beyond hazard could be controlled and include social, institutional, and environmental factors. The author also discusses how investments and international cooperation have grown but remain limited compared to the scale of disasters. Integrating risk management into development planning such as education, infrastructure, and health systems. Building resilience means strengthening communities socially and economically, not just physically. Awareness, education, and governance play a key role in disaster management. The future of disaster risk reduction depends on addressing vulnerability and resilience together and not only focusing on response measures after disasters occur. (Briceno, 2015)

Knowledge of Disaster Risk Reduction among School Students in Nepal by Gangalal Tuladhar, Ryuichi Yatabe, Ranjan Kumar Dahal and Netra Prakash Bhandary (2014) focused on how much the school students in Nepal know about disaster risk reduction. The study said that Nepal face many disasters like earthquake, flood and landslide and the school children are also in risk. The author explained that even though some schools started disaster education, still there is not much research done to see how much students really know or how they act during the disasters. The study used survey method with questionnaire to collect data from the schools were selected by random sampling. The questions were about their knowledge, awareness, readiness behavior and how they adapt to disasters. The data was analyzed by histogram analysis, bivariate correlation and independent t-test to find difference between gender, age and experience with disaster.

The result showed that students have only medium level of knowledge about disaster and awareness is not high. They knew about disasters but little confused how to adapt in real situation. Most of them got disaster information from TV and radio, and very less from internet or books. The study conclude that disaster education in Nepal is still weak and more effort needed to make students understand better about disaster preparedness. The disaster education should not stop in school but also go to community and families to make all people more safe during disasters. (Tuladhar, Yatabe, Bhandary, & Dahal, 2014)

Hussain, Rasool, and Ahmad (2023) did a research on disaster risk reduction and school safety management in Pakistan. The study focused to find how much teachers and students are ready

for disasters and how school management system works during emergency. The author said that Pakistan faces many natural disasters like earthquake, flood, and landslides and schools are also affected because they are not well prepared.

The study used mixed method with survey and interview. Questionnaire was given to teachers and students and interviews were done with school heads to understand their experience and knowledge. Data was analyzed using percentage and descriptive analysis to see the level of preparedness and awareness among the respondents.

The result showed that most of the teachers and students have only basic understanding about disaster risk reduction. Many schools have no proper plan or training for disaster management. The teachers told that they need more training and materials for teaching about disaster. The study also found that school buildings are not safe and emergency drills are not happening regularly.

The research conclude that disaster management in schools of Pakistan is still in early stage. The author said that government and education department should work together to make disaster risk reduction part of school curriculum and give more training to teachers and students so they can protect themselves and others in time of disaster. (Shah, Gong, Pal, & Sun, 2020)

According to Students' preparedness for disasters in schools: a systematic review protocol article by Hamed Seddighi, Homeira Sajjadi, Sepideh Yousefzadeh, Mónica López López, Meroe Vameghi, Hassan Rafiey, Hamid Reza Khankeh, Magdalena Garzon Fonseca , addresses about the vulnerability of the children.

It defines of the key terms like preparedness, disasters , and hazards and categories of natural hazards. The children's physical and mental health is important thing to be seriously enquire is need in disaster setting. Child trafficking, increasing of child violence in affected area is increasing.

The aim of the literature is to identify the methods, outcomes , facilitators and barriers of educational programmes in the schools that prepare children for disaster preparedness. This is a cross sectional research method including observational studies and the preparedness of the children include knowledge, attitude and behaviour on the disasters. The participants who were excluded between under the age 4 and above 18 years old. Data is collected through a electronic data base including MEDLINE, Web of Science, CINAHL, PsycINFO, Cochrane Register of Controlled Trials (CENTRAL) and EMBASE to identify the records meeting the mentioned inclusion criteria and published till April 2020.

Two reviewers will be placed for data retrieval and agreement will be achieved through conversation, moreover, a narrative synthesis is used for this paper. The narrative synthesis refers to an approach to systematic reviews that focuses mostly on use of words and texts to summarise and explain findings. (Seddighi, et al., 2020)

According to D. I. Pambudi and A. Ashari (2019) in their article “Enhancing the Role of Elementary Schools in Developing Sustainable Disaster Preparedness: A Review with Some Examples from Disaster-Prone Areas of Merapi,” the location of a place can itself be a source of vulnerability. Therefore, it is essential for children to be made aware of the situations and risks present in their environment. The community and stakeholders related to school are part of the disaster preparedness and helps in reducing the risk so involving of the community in the process and study on the community also possible in the research.

Educating students in the school is also taken as important in the research like applying of strategies in the curriculum in or linking with the disciplines. Through this children can spread their knowledge to others like in family, community etc.

For the preparedness approach the three pillar approach put forward were safe learning facilities, school disaster management, and disaster risk reduction education. The focusing of standard operating procedure with the strategies also a major concern to look after in the research. The role of principal is important because the role who takes care of the school must be the principal and so the role in responsibility to make a safe environment to students is necessary and also in recovery process to.

Practicing of local government policy and implementation like school plan and budget plan make more precise action for an year make promising to count on. Innovations like e-platforms and real objective lessons, early warnings can educate, moreover collaborations of Ministry of education and other institution can prepare preparedness programs.

The assessing of capacity, vulnerability and resources are important for better analysis of the vulnerability of the area. thus create a capability to improve in a community also will be ensured in the process. One of the main goal to build a culture of preparedness among students and the wider community. Challenges of issues in implementing were found that funding , lack of teachers participation and coordination of other agencies, and only very small in number of the school in Merapi is prepared for disasters. (Pambudi & Ashari, 2019)

According to Khoirunisa, N. (2016). Disaster knowledge of student for disaster preparedness. The First International Conference on Child-Friendly Education, this literature says about the country Indonesia which is 3rd in the world outside of 153 countries on the risk of earthquake and it shares three tectonic plates.

The students in the school are less prepared for disasters and it causes lack of experience and moreover it is major factor. The knowledge of students can be strengthened and it will result the raises of awarness in the community.

The level of knowledge in preparedness is crucial for the action during disasters. The research was to understand the level of students knowledge and level of students preparedness in facing earthquake.

This study adopted a quantitative descriptive research design to assess disaster knowledge and preparedness among school students in disaster-prone areas. Data were collected using a structured questionnaire from students across different school levels, and the responses were analyzed. The findings revealed that while students had a moderate level of disaster knowledge, their overall preparedness was only at an “almost ready” level, indicating a clear gap between awareness and practical readiness. The study concluded that knowledge alone is not sufficient to ensure safety unless it is supported by regular training, drills, and school-level preparedness planning. Therefore, it is recommended that schools conduct periodic disaster mock drills, strengthen early warning communication, ensure safe evacuation routes, and integrate disaster education into the school curriculum to improve students’ ability to respond effectively during emergencies. (Khoirunisa, 2016)

A systematic review of Community Engagement (CE) in Disaster Early Warning Systems (EWSs), by Sufri et al. (2020). There are four elements that connected with the community with the early warning system that are knowledge, monitoring, dissemination, communication and response capability, this was followed by the report from the UNDRR in 2006 and is considered as the important elements for the safety of the community and individuals from injuries and death. Dissemination of the early warning is to be received to the targeted population and the clearly understood and the wise decision could be taken from education and training, preparedness, and risk awareness program.

It is not just the connection between technology and the community and but it is a integrated action with several departments. Moreover, this is a systematic literature review and followed by general guidelines like question definition, search protocol (the collection of data from

various citations and organisations reports which all are publish and inclusion criteria such as the publication period and keyword search process and language). Overall, there were 31 documents were reviewed. The main aim to be done was to identify the themes common to the literature selected. In 2006, UNDRR defined the early warning system as “asetof capacities needed to generate and disseminate timely and meaningful warning information to enable individuals,

communities and organisations threatened by a hazard to prepare and act appropriately and in sufficient time to reduce the possibility of harm or loss”. The engagement of the community makes the process more stronger facilitating collaboration and empowering the community as a whole. There were findings that there were indigenous contribution or local knowledge added upon the EWS. (Sufri, Dwirahmadi, Phung , & Rutherford, 2020)

According to Kawasaki et al. (2023), the current situation of disaster preparedness in Japanese special needs schools highlights the importance of tailored planning and effective response strategies to ensure the safety of vulnerable students. The disabled population of the country is not that well prepared as like the general category and the special schools have also do not have sufficient preparedness for disasters. Here identification of welfare shelters as the school is like promoting the school into a category of development. But along with this preparation for the disasters are not in progress. The school budget is used for the education and the disaster management is handled by various agencies and thus this preparation makes the school as a welfare shelter due to lack of finance and there are also issues like the agencies are also do not know about there role to function and allocate funds. The designated special schools as welfare shelters play a major role even if the normal schools are there not even designated. The finding of the designated schools will prepare the country for to relay as shelter during disasters and it is the strength of the country. (Kawasaki, Cui, Kurokawa, & Sonai, 2023)

The school safety and disaster education in the Caribbean and Latin American shaped by both global frame work and regional experience. In South America and Caribbean, the school act as a community shelter in disasters, the common disasters in the region are earthquakes, hurricanes, and floods. Cuba and Chile have strong policy in earth quake resistant school building. In the rural and poorer ares school often lack the resources, training staff and no proper monitoring system. The paper adds the suggestion to education fit with local need resources and the school resilience need both cultural and technical solutions. (Muñoz , et al., 2020)

“Implementation of School Safety Policy in Primary and Secondary

Schools” the paper highlights the primary and secondary schools has been widely examined in educational policy and its implementation, the key constraints for implementing the policy is execution of resource allocation, administrative and varying awareness among the stakeholders. The paper highlights the importance of integrating the curriculum, training teachers and staff, and fostering participatory approaches that involve students and parents. Aligning of scholarships on disaster risk reductions in education which will pressure preparedness and resilience included in the culture of learning. The main challenge fall back is the follow up and evaluation of implementation of the policy. Many schools face inadequate infrastructure, limited funding, insufficient coordination between government agency and education institutions. The implementation is a proactive method to reduce the risk, inclusive and standard safeguard approach. (Masekela, Ngobeni, & Sepeng, 2024)

CHAPTER 3

RESEARCH METHODOLOGY

3. Introduction

The chapter describes the research approach, research design, universe and unit of study, sampling method, pilot study, pre-test, sources of data, data collection tool, operational definitions of the key concepts, data analysis techniques, ethical considerations, and the assumptions, limitations, and scope of the study. These methodological procedures provided a structured framework for assessing disaster preparedness among schools in Trivandrum district and facilitated the systematic analysis and interpretation of the collected data.

3.1 Research Approach

The present study adopts a quantitative research approach to assess disaster preparedness among schools in Trivandrum district. Quantitative research is a systematic method of investigation that involves the collection and analysis of numerical data to understand a phenomenon objectively. According to Creswell (2014), quantitative research is useful for measuring variables, testing relationships, and presenting findings statistically.

The approach was selected because the study focuses on measuring different dimensions of disaster preparedness, including the involvement of school authorities, availability of emergency plans, early warning systems, and non-structural safety conditions. The structured questionnaire enabled the collection of measurable data from schools, which were analysed using descriptive statistical techniques. The quantitative approach provides greater objectivity, reliability, and comparability of findings, thereby helping to assess the preparedness status of schools accurately.

3.2 Research Design

The present study adopted a cross-sectional research design. a cross-sectional design is thus understood as a snapshot approach that describes the current state of a population and examines associations among variables at one moment, without tracking change over time or manipulating conditions (Lewis-Beck, Bryman , & Liao, 2015). Unlike longitudinal studies, which involve repeated observations over an extended period, cross-sectional studies focus on collecting information only once, thereby providing a snapshot of the existing situation.

The cross-sectional research design was considered appropriate for the present study because the objective was to assess the existing level of disaster preparedness among schools in Trivandrum district. The study did not intend to measure changes in preparedness over time

but rather to understand the current practices followed by schools in relation to disaster management. Through this design, information regarding school authorities' involvement, emergency plans, early warning systems, and non-structural safety conditions was collected simultaneously from all selected schools. The design also enabled comparison of preparedness levels among schools belonging to different management categories and geographical locations while ensuring efficient use of time and resources.

3.3 Universe and Unit of Study

The research universe refers to the entire population from which the sample for the study is drawn. For the present study, the research universe comprises all government, aided, and private schools in Trivandrum district, Kerala. These schools are located across different geographical settings, including coastal, near-coastal, plain, and hilly areas. The universe represents all schools that fall within the scope of the study and are relevant for assessing disaster preparedness among schools in the district.

The unit of study refers to the primary entity on which the research is conducted and analysed. In the present study, each individual school was considered as the unit of study. Although data were collected from one teacher representing each selected school, the information provided reflected the disaster preparedness practices, policies, and safety measures of the respective school. Therefore, the analysis and interpretation of the data were carried out at the school level rather than at the individual respondent level.

3.4 Sampling Method

The present study adopted a purposive sampling method for selecting the sample. Purposive sampling is a non-probability sampling technique in which the researcher intentionally selects participants based on specific characteristics relevant to the objectives of the study. This method was considered appropriate because the study focused on assessing disaster preparedness among schools, and information was required from respondents who possessed adequate knowledge regarding school safety practices and disaster management activities. The study included government, aided, and private schools located in Trivandrum district, and one teacher from each selected school who was familiar with the school's disaster preparedness measures was chosen as the respondent.

Inclusion Criteria

The inclusion criteria comprised schools located within Trivandrum district that were willing to participate in the study and teachers who had sufficient knowledge of the school's disaster preparedness practices.

Exclusion criteria

The exclusion criteria included schools located outside Trivandrum district, schools that did not provide consent to participate, newly established schools, and schools with a student population of fewer than 200.

3.5 Pilot Study

A pilot study was conducted before the main data collection to assess the feasibility of the study and the suitability of the research instrument. The researcher identified the feasibility of the study through preliminary visits to selected schools in Trivandrum district. During these visits, the researcher interacted with school teachers and school authorities to gain a better understanding of the existing disaster preparedness practices, school safety measures, and disaster management activities. The pilot study enabled the researcher to evaluate the practicality of the questionnaire, identify ambiguities in the questions, and make necessary modifications to improve its clarity, sequence, and relevance before administering it to the final sample.

3.6 Pre test

To assess the feasibility and suitability of the data collection tool, the researcher conducted a pre-test of the structured questionnaire among 3 teachers from schools that were not included in the final sample. The purpose of the pre-test was to identify any ambiguity in the questions, assess the clarity of the language, and determine whether the questionnaire was appropriate for achieving the objectives of the study.

After analysing the responses obtained during the pre-test, minor modifications were made to improve the wording, sequence, and clarity of certain questions. These changes helped make the questionnaire more respondent-friendly and ensured that the questions were easily understood by the participants. The revised questionnaire was then finalized and used for the main data collection.

3.7 Source of Data

The study utilized both primary and secondary sources of data to obtain comprehensive information related to disaster preparedness among schools.

Primary data were collected directly from the selected schools through a structured questionnaire administered to school teachers. One teacher from each selected school was selected as the respondent because teachers possess adequate knowledge regarding school administration, disaster preparedness activities, emergency response mechanisms, and implementation of school safety practices. Prior permission was obtained from the respective school authorities before collecting the data. The purpose and objectives of the study were explained to the respondents, and their voluntary participation was ensured. The questionnaire was distributed through Google Forms, allowing respondents to complete it electronically at their convenience. The use of Google Forms facilitated efficient data collection, minimized manual data entry errors, and enabled easy compilation of responses for statistical analysis. The information collected through the questionnaire formed the primary database for the study.

Secondary data were collected from various published sources to strengthen the theoretical and conceptual foundation of the research. Relevant information was gathered from books, peer-reviewed journals, research articles, government reports, district disaster management plans, policy documents, official websites, and school safety guidelines. Various national and state-level policy documents relating to school safety and disaster preparedness were also reviewed. These secondary sources provided conceptual understanding, policy support, and background information that helped in developing the research framework, preparing the questionnaire, reviewing previous studies, and interpreting the findings of the study.

3.8 Data Collection Tool

A structured questionnaire was used as the primary instrument for collecting data from the selected schools. The questionnaire was prepared after reviewing various school safety guidelines, disaster preparedness frameworks, and previous research studies relevant to the topic. The questionnaire consisted mainly of closed-ended questions, allowing respondents to provide standardized responses suitable for quantitative analysis. The questions were designed to collect information regarding the demographic profile of schools, involvement of school authorities in disaster preparedness, availability and condition of emergency plans, early warning systems and communication mechanisms, and non-structural safety conditions within

school buildings. The structured nature of the questionnaire ensured consistency in data collection and facilitated comparison of responses across different schools.

3.9 Definition of concepts

Preparedness

Conceptual Definition:

“Preparedness is the aggregate of all measures and policies adopted before an event occurs that promotes mitigation of the damage caused by an event and minimizes its adverse effects on society.” (Sundnes & Birnbaum)

Operational Definition:

Preparedness is defined as the readiness capacity of schools measured through emergency response plans, availability of trained personnel, adequacy of safety equipment, evacuation procedures, frequency of drills, early warning systems, and the level of awareness among students, teachers, and staff.

Disaster Risk Reduction

Conceptual Definition:

“Disaster risk reduction is a systematic approach to identifying, assessing, and reducing the risks of disaster, aiming to minimize socio-economic and environmental vulnerabilities and to prevent or mitigate the adverse impacts of hazards.” (Niekerk, 2011)

Operational Definition:

In this study, Disaster Risk Reduction refers to the systematic efforts undertaken by schools to reduce disaster vulnerability, measured through evaluation of training programmes for teachers and students, functionality of disaster management committees, availability of safety infrastructure and equipment, frequency of mock drills, integration of disaster education into the academic curriculum, and preparedness for response and recovery.

3.10 Data Analysis

After the completion of data collection, all responses obtained through Google Forms were carefully verified, coded, and entered into the Statistical Package for the Social Sciences version 22 (SPSS) for analysis. Each response was assigned numerical values to facilitate

statistical processing. The data were checked for completeness, consistency, and accuracy before conducting the analysis.

Descriptive statistical techniques such as frequency, percentage, mean, and standard deviation were used to summarize and describe the characteristics of the collected data. Frequency and percentage distributions were used to present demographic characteristics and various indicators of disaster preparedness among schools. Mean and standard deviation were calculated to understand the average level of preparedness and the variation in responses across different preparedness dimensions.

In addition to descriptive statistics, cross-tabulation analysis was carried out to examine the relationship between selected variables such as school management, geographical location, terrain, and different dimensions of disaster preparedness. Cross-tabulation facilitated comparison of preparedness indicators among different categories of schools and provided a clearer understanding of the existing preparedness patterns. The analysed data were presented through tables and graphical representations to enhance clarity and facilitate interpretation of the research findings.

3.11 Ethical Considerations

The study strictly adhered to ethical principles throughout the research process. Prior permission was obtained from the concerned school authorities before initiating data collection. The respondents were informed about the purpose and objectives of the study, and their participation was entirely voluntary. The confidentiality and anonymity of both the respondents and the participating schools were maintained throughout the research process. No personal identifiers were collected, and the information obtained was used solely for academic purposes. The researcher ensured that the data collection process did not cause any physical, psychological, or professional harm to the participants. All information collected during the study was handled responsibly and securely to maintain the integrity and credibility of the research.

3.12 Assumptions, Limitations and Scope

Assumptions of the Study

The researcher assumes that the information provided by the respondents is accurate, reliable, and based on their knowledge and experience regarding disaster preparedness practices in their

respective schools. It is also assumed that the respondents answered the questionnaire honestly and that the collected data reflect the existing disaster preparedness status of the selected schools.

Limitations of the Study

The study is limited to 66 selected schools in Trivandrum district, and therefore the findings may not be generalizable to schools in other districts or states. The study relied on responses obtained from one teacher representing each selected school, which may not fully reflect the perspectives of all stakeholders within the school. In addition, the study was based on self-reported information, which may be subject to response bias.

Scope of the Study

The study focuses on assessing disaster preparedness among government, aided, and private schools in Trivandrum district. It examines the involvement of school authorities in disaster preparedness, the availability and condition of emergency plans, the effectiveness of early warning systems, and the physical safety condition of non-structural elements in school buildings. The findings of the study provide insights into the existing level of disaster preparedness among the selected schools and may support educational institutions and disaster management authorities in strengthening school safety and disaster risk reduction initiatives.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4 Introduction

This chapter presents the analysis and interpretation of the data collected from 66 schools in Trivandrum district to assess disaster preparedness among schools. The collected data were analysed using the Statistical Package for the Social Sciences (SPSS). The findings are presented systematically to address the objectives of the study and to understand the existing level of disaster preparedness in the selected schools.

The chapter is divided into two sections. The first section (Sections 4.1 to 4.4) presents the analysis using frequency and percentage to describe the demographic characteristics of the schools and the various dimensions of disaster preparedness, including the involvement of school authorities, early warning information, and the physical safety condition of non-structural elements in school buildings. The second section (Sections 4.5 to 4.10) presents the cross-tabulation analysis, which examines the relationship between selected variables to provide a better understanding of disaster preparedness among the selected schools. The analysed data are presented through tables and interpreted based on the objectives of the study.

4.1 Demographic Details

DEMOGRAPHIC DETAILS		FREQUENCY	PERCENTAGE	MEAN	SD
SCHOOL LEVEL	Pre-Primary	7	10.6	3.48	1.339
	Primary	8	12.1		
	UP	18	27.3		
	HS	12	18.2		
	HSS	21	31.8		
TYPE OF MANAGEMENT	Government	17	25.8	2.05	.753
	Aided	29	43.9		
	Private	20	30.3		
LOCATION (TERRAIN)	Coastal	21	31.8	2.44	1.139
	Near coastal	8	12.1		
	Plain	24	36.4		
	Hill	13	19.7		
BOARD OF SCHOOL	CBSE	12	18.2	18	0.83
	STATE	55	83.3	0.389	0.376
	ICSE	0	0.0	0	0

Table 4.1: Demographic Details

Table 4.1 presents the demographic profile of the schools included in the study. The findings show that Higher Secondary Schools constituted the largest proportion of the sample (31.8%), followed by Upper Primary Schools (27.3%), High Schools (18.2%), Primary Schools (12.1%),

and Pre-Primary Schools (10.6%). The mean score of 3.48 (SD = 1.339) indicates that the sample was largely represented by upper-level educational institutions.

With regard to school management, aided schools formed the largest category (43.9%), followed by private schools (30.3%) and government schools (25.8%). This distribution reflects the diversity of educational management systems operating within the district.

The geographical distribution indicates that 36.4% of the schools were located in plain areas, 31.8% in coastal areas, 19.7% in hilly areas, and 12.1% in near-coastal areas. The inclusion of schools from different terrains is important as hazard exposure and vulnerability vary according to geographical conditions.

The majority of schools (83.3%) followed the State Board curriculum, while 18.2% followed the CBSE curriculum. No ICSE schools were represented in the sample. This finding suggests that the preparedness status identified in the study largely reflects schools functioning under the State Board system.

4.2 Involvement of School Authorities in Preparedness

School Authorities' Involvement in Preparedness		FREQUENCY	PERCENTAGE	MEAN	SD
DM plan in school	Yes	34	51.5	1.61	.699
	No	24	36.4		
	Not Aware	8	12.1		
DM plan annual maintained	Yes	22	22	1.85	.707
	No	32	32		
	Not Aware	12	12		
Mock Drills & Preparedness Calendar	Yes	25	37.9	1.76	.681
	No	32	48.5		
	Not Aware	9	13.6		
Budget Allocation for Preparedness	Yes	20	30.3	1.77	.576
	No	41	62.1		
	Not Aware	5	7.6		
Student Handover & Shelter Transfer Policy	Yes	23	34.8	1.80	.684
	No	33	50.0		
	Not Aware	10	15.2		
Rescue & Evacuation Routes Displayed	Yes	20	30.3	1.80	.613
	No	39	59.1		
	Not Aware	7	10.6		
National Building Codes Followed	Yes	55	83.3	1.26	.615
	No	5	7.6		
	Not Aware	6	9.1		
Annual Building Safety Certificate	Yes	44	66.7	1.42	.658
	No	16	24.2		
	Not Aware	6	9.1		
	Yes	21	31.8	1.74	.563

Child-Friendly & Inclusive Construction	No	41	62.1		
	Not Aware	4	6.1		
Awareness of Possible Disasters	Yes	27	40.9	1.62	.548
	No	37	56.1		
	Not Aware	2	3.0		
Teachers' First Aid Training	Yes	37	56.1	1.52	.638
	No	24	36.4		
	Not Aware	5	7.6		
Monthly Disaster Awareness Activities	Yes	18	27.3	1.79	.541
	No	44	66.7		
	Not Aware	4	6.1		
Community Participation in Programmes	Yes	43	65.2	1.44	.659
	No	17	25.8		
	Not Aware	6	9.1		
Teacher in Charge of Safety	Yes	36	54.5	1.53	.638
	No	25	37.9		
	Not Aware	5	7.6		

Table 4.2: Involvement of School Authorities in Preparedness

Table 4.2 examines the involvement of school authorities in disaster preparedness activities. The findings reveal that 51.5% of schools reported having a Disaster Management Plan, while 36.4% reported not having one and 12.1% were unaware of its existence. Although the presence of disaster management plans in over half of the schools is encouraging, the findings indicate that preparedness planning has not been fully institutionalized across all schools.

Only 33.3% of schools reported annual maintenance of disaster management plans, and less than forty percent (37.9%) conducted mock drills and preparedness activities. These findings suggest that disaster preparedness measures are often not reviewed or practiced regularly.

Budget allocation for preparedness activities was reported by only 30.3% of schools, indicating limited financial commitment toward disaster risk reduction activities. Similarly, only 34.8% of schools had a student handover and shelter transfer policy, while rescue and evacuation routes were displayed in only 30.3% of schools. On a positive note, 83.3% of schools reported following National Building Codes and 66.7% possessed annual building safety certificates. These findings demonstrate a relatively high level of compliance with structural safety requirements.

Teacher preparedness was moderate, with 56.1% of schools reporting first-aid training for teachers and 54.5% identifying a teacher responsible for school safety. However, only 27.3% conducted monthly disaster awareness activities. Community participation was observed in 65.2% of schools, indicating that schools have established some level of collaboration with the surrounding community.

Overall, the findings suggest that while schools demonstrate compliance with structural safety standards, significant gaps remain in preparedness planning, budgeting, awareness programmes, evacuation arrangements, and regular preparedness activities.

4.3 Early Warning Information

Early Warning Information		FREQUENCY	PERCENTAGE	MEAN	SD
Official Hazard Warning Messages	Always	41	62.1	1.67	1.013
	Sometimes	13	19.7		
	Rarely	5	7.6		
	Never	7	10.6		
Assigned Hazard Warning Monitor	Always	28	42.4	1.98	1.088
	Sometimes	22	33.3		
	Rarely	5	7.6		
	Never	11	16.7		
Backup Warning Communication Method	Always	37	56.1	1.82	1.080
	Sometimes	12	18.2		
	Rarely	9	13.6		
	Never	8	12.1		
Teachers' Hazard Warning Knowledge	Always	46	69.7	1.38	.627
	Sometimes	15	22.7		
	Rarely	5	7.6		
	Never	0	0.0		
Hazard Warning Training & Orientation	Always	31	47.0	1.82	.927
	Sometimes	20	30.3		
	Rarely	11	16.7		
	Never	4	6.1		
Emergency/Evacuation Plan Activation	Always	42	63.6	1.53	.789
	Sometimes	14	21.2		
	Rarely	9	13.6		
	Never	1	1.5		
Accessible Early Warning Messages	Always	38	57.6	1.58	.766
	Sometimes	19	28.8		
	Rarely	8	12.1		
	Never	1	1.5		

Table 4.3: Early Warning Information

Table 4.3 presents the status of early warning information systems within schools. The findings indicate that a majority of schools (62.1%) always receive official hazard warning messages, demonstrating the existence of communication channels for hazard information dissemination.

Teachers' knowledge regarding hazard warnings was found to be relatively high, with 69.7% reporting that teachers always understand warning information and the necessary response

actions. Similarly, 63.6% of schools reported that emergency and evacuation plans are always activated when warning messages are received.

More than half of the schools (56.1%) reported the availability of backup communication methods, which is an important component of effective early warning systems. Furthermore, 57.6% indicated that warning messages are accessible to the school community.

Despite these positive findings, several gaps remain. Only 42.4% of schools reported having a designated hazard warning monitor, while 16.7% indicated that such arrangements were never in place. Additionally, only 47.0% of schools reported regular training and orientation related to hazard warnings, suggesting that warning systems are not consistently supported by preparedness education.

Overall, the findings indicate that schools have reasonably effective early warning mechanisms and awareness regarding hazards. However, strengthening designated warning management systems, communication arrangements, and regular training programmes would further improve preparedness and response capacity.

4.4 Non-structural elements in school building

Non-structural elements in school buildings		FREQUENCY	PERCENTAGE	MEAN	SD
Architectural					
Stone Wall Cladding Condition	Not present	11	16.7	1.89	.468
	Present – all units are safely fixed	51	77.3		
	Present – some units are unsafe	4	6.1		
	Present but fully unsafe	0	0.0		
Cracked Cement Plaster Condition	Not present	8	12.1	1.95	.445
	Present – all units are safely fixed	53	80.3		
	Present – some units are unsafe	5	7.6		
	Present but fully unsafe	0	0.0		
Sun Shade Condition	Not present	9	13.6	1.91	.420
	Present – all units are safely fixed	54	81.8		
	Present – some units are unsafe	3	4.5		
	Present but fully unsafe	0	0.0		

Table 4.4: Non-structural elements in school building

Table 4.4 presents the condition of architectural non-structural elements within the selected schools. The findings indicate that the majority of schools maintained these elements in safe condition. Stone wall cladding was reported as safely fixed in 77.3% of schools, while 80.3% reported that cement plaster was maintained safely. Similarly, 81.8% of schools indicated that sunshades were securely installed and maintained.

Only a small proportion of schools reported unsafe conditions in these elements, with 6.1% reporting unsafe stone wall cladding, 7.6% reporting unsafe cement plaster, and 4.5% reporting unsafe sunshades. The mean values ranging from 1.89 to 1.95 and relatively low standard deviations indicate consistency in responses across schools.

These findings suggest that most schools have taken adequate measures to maintain architectural components in safe condition. Proper maintenance of these elements reduces the likelihood of injuries and structural hazards during disasters such as earthquakes, heavy rainfall, and strong winds. However, the presence of unsafe conditions in a small number of schools highlights the need for regular inspections and maintenance.

4.4.2 Safety Equipment

Safety Equipment		FREQUENCY	PERCENTAGE	MEAN	SD
Stretcher Availability	Not present	29	43.9	1.65	.690
	Present – all units are safely fixed	33	50.0		
	Present – some units are unsafe	2	3.0		
	Present but fully unsafe	2	3.0		
Ladder Availability for Emergency Evacuation	Not present	18	27.3	1.83	.622
	Present – all units are safely fixed	42	63.6		
	Present – some units are unsafe	5	7.6		
	Present but fully unsafe	1	1.5		
Thick Rope Availability	Not present	17	25.8	1.85	.614
	Present – all units are safely fixed	43	65.2		
	Present – some units are unsafe	5	7.6		
	Present but fully unsafe	1	1.5		
Torch Availability for Emergencies	Not present	15	22.7	1.86	.605
	Present – all units are safely fixed	47	71.2		
	Present – some units are unsafe	2	3.0		
	Present but fully unsafe	2	3.0		
First Aid Box Availability	Not present	3	4.5	2.09	.488
	Present – all units are safely fixed	56	84.8		
	Present – some units are unsafe	5	7.6		
	Present but fully unsafe	2	3.0		
Fire Extinguisher Availability	Not present	7	10.6	2.09	.626
	Present – all units are safely fixed	49	74.2		
	Present – some units are unsafe	7	10.6		
	Present but fully unsafe	3	4.5		

Table 4.5: Safety Equipment

The assessment of safety equipment revealed varying levels of preparedness among schools. Essential emergency resources such as first aid boxes (84.8%) and fire extinguishers (74.2%) were available and maintained in safe condition in the majority of schools. Similarly, torchlights (71.2%), thick ropes (65.2%), and evacuation ladders (63.6%) were available in most institutions.

However, a notable gap was observed in stretcher availability, with 43.9% of schools reporting the absence of this equipment. Since stretchers play a crucial role in evacuation and emergency response, their limited availability may affect the capacity of schools to respond effectively during disasters. The mean scores indicate relatively better preparedness for first aid boxes and

fire extinguishers ($M = 2.09$), while stretcher availability recorded the lowest mean value ($M = 1.65$).

Overall, the findings indicate that schools have prioritized basic safety equipment, but additional efforts are required to strengthen emergency rescue and evacuation resources.

4.4.3 Furniture and Equipment

Furniture and Equipment		FREQUENCY	PERCENTAGE	MEAN	SD
Bookshelves Availability	Not present	5	7.6	1.98	.372
	Present – all units are safely fixed	57	86.4		
	Present – some units are unsafe	4	6.1		
	Present but fully unsafe	0	0		
Display Cupboards/Almirahs Availability	Not present	5	7.6	1.98	.372
	Present – all units are safely fixed	57	86.4		
	Present – some units are unsafe	4	6.1		
	Present but fully unsafe	0	0		
Laboratory Equipment Availability	Not present	11	16.7	1.95	.593
	Present – all units are safely fixed	49	74.2		
	Present – some units are unsafe	4	6.1		
	Present but fully unsafe	2	3.0		
Computer Equipment Availability	Not present	7	10.6	1.97	.463
	Present – all units are safely fixed	55	83.3		
	Present – some units are unsafe	3	4.5		
	Present but fully unsafe	1	1.5		
Ceiling Fan Availability	Not present	3	4.5	2.00	.351
	Present – all units are safely fixed	61	92.4		
	Present – some units are unsafe	1	1.5		
	Present but fully unsafe	1	1.5		
Speaker Devices Availability	Not present	6	9.1	1.94	.345
	Present – all units are safely fixed	58	87.9		
	Present – some units are unsafe	2	3.0		
	Present but fully unsafe	0	0		
Computer, Printer & Photocopy Machines Availability	Not present	4	6.1	2.03	.391
	Present – all units are safely fixed	56	84.8		
	Present – some units are unsafe	6	9.1		

	Present but fully unsafe	0	0.0		
Moveable Wooden Partition Availability	Not present	35	53.0	1.50	.562
	Present – all units are safely fixed	29	43.9		
	Present – some units are unsafe	2	3.0		
	Present but fully unsafe	0	0		

Table 4.6: Furniture and Equipment

The table 4.6 findings show that furniture and equipment within schools were generally maintained in safe condition. More than three-fourths of the schools reported that bookshelves (86.4%), display cupboards (86.4%), computer equipment (83.3%), speaker devices (87.9%), and computer-printer-photocopy machines (84.8%) were securely installed and maintained. Ceiling fans recorded the highest safety level, with 92.4% of schools reporting safe installation.

Laboratory equipment was safely maintained in 74.2% of schools, although a small proportion reported unsafe conditions. Movable wooden partitions were absent in more than half of the schools (53.0%), reflecting their limited use in educational institutions.

The findings indicate that schools generally maintain furniture and equipment in safe condition, thereby reducing the likelihood of injuries during disaster situations. Nevertheless, regular monitoring and maintenance remain essential to ensure continued safety.

4.4.4 Ceiling and Overhead

Ceiling and Overhead		FREQUENCY	PERCENTAGE	MEAN	SD
Light Fixtures Safety Condition	Not present	5	7.6	1.97	.349
	Present – all units are safely fixed	58	87.9		
	Present – some units are unsafe	3	4.5		
	Present but fully unsafe	0	0		
Water Tank Safety Condition	Not present	4	6.1	2.02	.411
	Present – all units are safely fixed	58	87.9		
	Present – some units are unsafe	3	4.5		
	Present but fully unsafe	1	1.5		
Flower Pots Safety Condition	Not present	4	6.1	2.02	.372
	Present – all units are safely fixed	57	86.4		
	Present – some units are unsafe	5	7.6		
	Present but fully unsafe	0	0		

Table 4.7: Ceiling and Overhead

Table 4.7 presents the physical safety condition of ceiling and overhead elements in the selected schools. The findings indicate that the majority of schools maintained these elements in safe condition. Light fixtures and water tanks were safely installed in 58 schools (87.9%) each, while flower pots were safely maintained in 57 schools (86.4%). This suggests that most schools have given adequate attention to the maintenance of ceiling and overhead elements, thereby reducing the possibility of injuries caused by falling or unstable objects during emergencies.

A small proportion of schools reported some unsafe units, with 3 schools (4.5%) each for light fixtures and water tanks, and 5 schools (7.6%) for flower pots. In addition, only one school (1.5%) reported a fully unsafe water tank, while no schools reported fully unsafe light fixtures or flower pots. A few schools also reported the absence of these elements. The mean scores ranged from 1.97 to 2.02, indicating that the overall safety condition of ceiling and overhead elements was satisfactory.

Overall, the findings suggest that ceiling and overhead elements were generally well maintained across the selected schools. However, the presence of a few unsafe installations highlights the importance of conducting regular safety inspections, timely maintenance, and necessary repairs to ensure a safer school environment and strengthen disaster preparedness.

4.4.5 Wall-Mounted Elements

Wall Mounted Items		FREQUENCY	PERCENTAGE	MEAN	SD
Wall Shelves Safety Condition	Not present	6	9.1	1.95	.409
	Present – all units are safely fixed	58	87.9		
	Present – some units are unsafe	1	1.5		
	Present but fully unsafe	1	1.5		
Picture Frames Safety Condition	Not present	4	6.1	2.03	.429
	Present – all units are safely fixed	57	86.4		
	Present – some units are unsafe	4	6.1		
	Present but fully unsafe	1	1.5		
Wall-Mounted Gadgets Safety Condition	Not present	9	13.6	1.95	.478
	Present – all units are safely fixed	51	77.3		
	Present – some units are unsafe	6	9.1		
	Present but fully unsafe	0	0		
LCD TV/Equipment Safety Condition	Not present	17	25.8	1.94	.721
	Present – all units are safely fixed	38	57.6		
	Present – some units are unsafe	9	13.6		
	Present but fully unsafe	2	3.0		
Air Conditioner Safety Condition	Not present	27	40.9	1.68	.660
	Present – all units are safely fixed	34	51.5		
	Present – some units are unsafe	4	6.1		
	Present but fully unsafe	1	1.5		
Wall-Mounted Water Purifier Safety Condition	Not present	5	7.6	2.05	.478
	Present – all units are safely fixed	54	81.8		
	Present – some units are unsafe	6	9.1		
	Present but fully unsafe	1	1.5		

Table 4.8: Wall-Mounted Elements

Table 4.8 presents the physical safety condition of wall-mounted elements in the selected schools. The findings indicate that the majority of schools maintained these elements in safe condition. Wall shelves were safely fixed in 58 schools (87.9%), while picture frames were safely installed in 57 schools (86.4%). Similarly, wall-mounted water purifiers were safely maintained in 54 schools (81.8%), and wall-mounted gadgets were safely fixed in 51 schools (77.3%). These findings suggest that most schools have taken adequate measures to ensure the safety of commonly used wall-mounted items.

However, comparatively lower safety levels were observed for LCD TVs/equipment and air conditioners. Only 38 schools (57.6%) reported that LCD TVs and related equipment were safely installed, while 9 schools (13.6%) had some unsafe units and 2 schools (3.0%) reported them as fully unsafe. Air conditioners were not present in 27 schools (40.9%); among the schools where they were available, 34 schools (51.5%) reported them as safely installed, while a small proportion reported unsafe conditions. The mean scores ranged from 1.68 to 2.05, indicating an overall satisfactory level of safety among the assessed wall-mounted elements.

Overall, the findings suggest that wall-mounted elements were generally well maintained in the majority of the selected schools. Nevertheless, the presence of partially unsafe and fully unsafe installations, particularly in LCD televisions and air conditioners, indicates the need for regular safety inspections, routine maintenance, and timely repairs. Strengthening the safety of these non-structural elements will help reduce the risk of injuries during disasters and contribute to a safer school environment.

4.5. DM Plan in School

DEMOGRAPHIC DETAILS		DM PLAN IN SCHOOL			
		YES	NO	NOT AWARE	TOTAL
LOCATION OF THE SCHOOL	RURAL	35.3(12)	50.0(12)	50.0(4)	28
	URBAN	64.7(22)	50.0(12)	50.0(4)	38
TERRAIN	COASTAL	23.5(8)	41.7(10)	37.5(3)	21
	NEAR COASTAL	8.8(3)	16.7(4)	12.5(1)	8
	PLAIN	44.1(15)	25.0(6)	37.5(3)	24
	HILL	23.5(8)	16.7(4)	12.5(1)	13
MANAGEMENT	GOVERNMENT	35.3(12)	16.7(4)	12.5(1)	17
	AIDED	32.4(11)	54.2(13)	62.5(5)	29
	PRIVATE	32.4(11)	29.2(7)	25.0(2)	20

Table 4.9: DM Plan in School

Table 4.9 presents the relationship between selected demographic characteristics of schools and the availability of a Disaster Management Plan (DMP).

With regard to the location of schools, a higher proportion of schools with a Disaster Management Plan were located in urban areas (64.7%; n=22) compared to rural areas (35.3%; n=12). Among schools that did not have a Disaster Management Plan, rural and urban schools were equally represented (50.0%; n=12 each). This finding suggests that urban schools may demonstrate comparatively better preparedness planning than rural schools.

Based on terrain, schools located in plain areas accounted for the highest proportion of schools with a Disaster Management Plan (44.1%; n=15), followed by coastal areas (23.5%; n=8) and hilly areas (23.5%; n=8). Near-coastal schools represented the smallest proportion (8.8%; n=3). Among schools without a Disaster Management Plan, coastal schools constituted the largest category (41.7%; n=10). This indicates that despite being vulnerable to multiple hazards, a considerable number of coastal schools lack formal disaster preparedness planning.

Regarding school management, government schools showed the highest proportion of Disaster Management Plan availability (35.3%; n=12), while aided and private schools each accounted for 32.4% (n=11). However, among schools without a Disaster Management Plan, aided schools represented the largest proportion (54.2%; n=13). This finding suggests that preparedness planning may vary across different management systems and highlights the need for greater attention to disaster management practices in aided schools.

Overall, the findings indicate that the availability of Disaster Management Plans varies according to school location, terrain, and management type. Urban schools, schools located in

plain areas, and government-managed schools demonstrated relatively better preparedness planning. In contrast, rural schools, coastal schools, and aided schools showed comparatively lower levels of Disaster Management Plan availability, indicating areas where preparedness efforts may need to be strengthened.

4.6 Disaster Experienced

DISASTER EXPERIENCED	DM PLAN		
	YES	NO	NOT AWARE
NO EXPERIENCE	29.4(10)	33.3(8)	50.0(4)
CYCLONE	17.6(6)	8.3(2)	12.5(1)
HEAVY RAIN	20.6(7)	20.8(5)	25.0(2)
TSUNAMI	5.9(2)	4.2(1)	25.0(2)
COASTAL EROSION	14.7(5)	16.7(4)	12.5(1)
LANDSLIDE	0.0(0)	0.0(0)	0.0(0)
EARTH QUAKE	0.0(0)	0.0(0)	0.0(0)

Table 4.10: Disaster Experienced

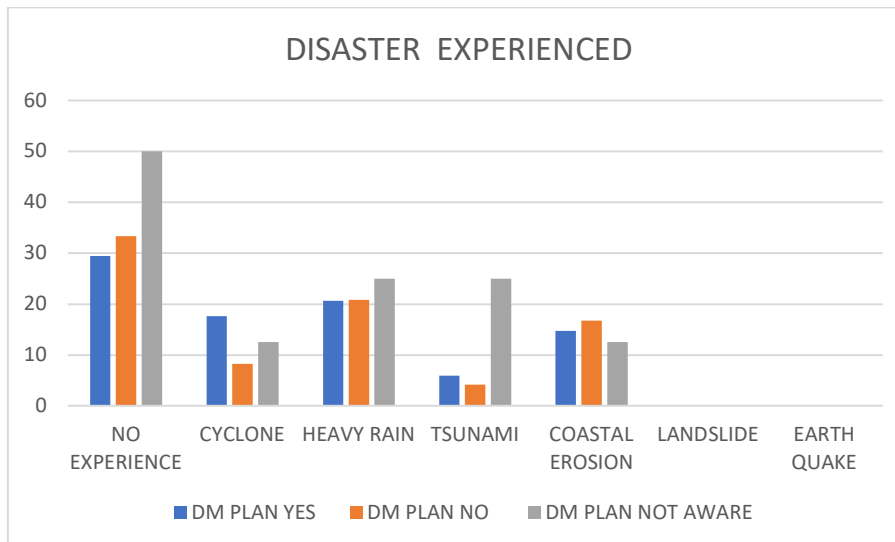


Figure 1: Disaster Experienced

Table 4.10 presents the relationship between disaster experiences reported by schools and the availability of a Disaster Management Plan (DMP). The findings indicate that schools with a Disaster Management Plan have experienced a variety of disaster events, with heavy rainfall being the most commonly reported hazard among 7 schools (20.6%), followed by cyclones reported by 6 schools (17.6%) and coastal erosion reported by 5 schools (14.7%). A total of 10 schools (29.4%) with a Disaster Management Plan reported no previous disaster experience.

Among schools without a Disaster Management Plan, heavy rainfall was also one of the most commonly reported hazards, affecting 5 schools (20.8%), while coastal erosion was reported by 4 schools (16.7%) and cyclones by 2 schools (8.3%). Additionally, 8 schools (33.3%) reported no previous disaster experience.

The findings further show that tsunami experiences were reported by a small number of schools, with 2 schools (5.9%) having a Disaster Management Plan and 1 school (4.2%) without a plan. No schools reported experiences related to landslides or earthquakes.

Overall, the results suggest that schools located in areas affected by hazards such as heavy rainfall, cyclones, and coastal erosion are more likely to have Disaster Management Plans in place. However, the presence of schools without Disaster Management Plans despite previous disaster experiences indicates gaps in preparedness planning. The findings highlight the importance of strengthening disaster preparedness measures in all schools, particularly those located in hazard-prone areas, to ensure effective disaster risk reduction and emergency response.

4.7 The Involvement Of School Authorities In Disaster Preparedness

MEMBERS IN DMC		DM PLAN IN SCHOOL			TOTAL
		YES	NO	NOT AWARE	
PRINCIPAL	YES	76.5(26)	0.0(0)	0.0(0)	26
	NO	17.6(6)	87.5(21)	75.0(6)	33
	NOT AWARE	5.9(2)	12.5(3)	25.0(2)	7
TEACHERS	YES	79.4(27)	0.0(0)	0.0(0)	27
	NO	14.7(5)	91.7(22)	75.0(6)	33
	NOT AWARE	5.9(2)	8.3(2)	25.0(2)	6
PARENT REPRESENTATIVE	YES	76.5(26)	0.0(0)	0.0(0)	26
	NO	20.6(7)	95.8(23)	87.5(7)	37
	NOT AWARE	2.9(1)	4.2(1)	12.5(1)	3
STUDENT REPRESENTATIVE	YES	64.7(22)	0.0(0)	0.0(0)	22
	NO	26.5(9)	91.7(22)	87.5(7)	38
	NOT AWARE	8.8(3)	8.3(2)	12.5(1)	6
PTA PRESEDENT	YES	70.6(24)	0.0(0)	0.0(0)	24
	NO	26.5(9)	91.7(22)	87.5(7)	38
	NOT AWARE	2.9(1)	8.3(2)	12.5(1)	4
NSS/SCOUTS/GUIDES/NCC/SPC	YES	47.1(16)	0.0(0)	0.0(0)	16
	NO	38.2(13)	95.8(23)	87.5(7)	43
	NOT AWARE	14.7(5)	4.2(1)	12.5(1)	7
GIRL AND BOY STUDENT REPRESENTATIVE	YES	70.6(24)	0.0(0)	0.0(0)	24
	NO	17.6(6)	100(24)	87.5(7)	37
	NOT AWARE	11.8(4)	0.0(0)	12.5(1)	5
FIRE AND RESCUE	YES	55.9(19)	0.0(0)	0.0(0)	19
	NO	29.4(10)	95.8(23)	87.5(7)	40
	NOT AWARE	14.7(5)	4.2(1)	12.5(1)	7
HEALTH DEPARTMENT	YES	70.6(24)	0.0(0)	0.0(0)	24
	NO	23.5(8)	95.8(23)	87.5(7)	38
	NOT AWARE	5.9(2)	4.2(1)	12.5(1)	4
CIVIL DEFENCE WARDEN	YES	32.4(11)	4.2(1)	0.0(0)	12
	NO	50.0(17)	83.3(20)	87.5(7)	44
	NOT AWARE	17.6(6)	12.5(3)	12.5(1)	10

Table 4.11: The Involvement Of School Authorities In Disaster Preparedness

The table 4.11 presents the association between the availability of a Disaster Management (DM) Plan in schools and the composition of the Disaster Management Committee (DMC).

The findings indicate that schools with a DM plan were more likely to report the inclusion of key stakeholders in the DMC. Among schools having a DM plan, the majority reported the presence of the Principal (76.5%), Teachers (79.4%), Parent Representatives (76.5%), Health Department representatives (70.6%), PTA President (70.6%), and Girl/Boy Student Representatives (70.6%). This suggests that schools with disaster preparedness mechanisms tend to maintain a more structured and inclusive committee.

In contrast, schools without a DM plan showed a higher proportion of respondents reporting the absence of these members in the DMC. For example, 87.5% of schools without a DM plan reported that the Principal was not included in the committee, while 91.7% reported the absence of Teachers and Student Representatives. Similarly, Parent Representatives (95.8%), Fire and Rescue personnel (95.8%), and Health Department representatives (95.8%) were largely absent in schools lacking a DM plan. These findings highlight a significant gap in stakeholder participation in schools without formal disaster preparedness measures.

The participation of external agencies such as Fire and Rescue, Civil Defence Wardens, and NSS/Scouts/Guides/NCC/SPC members was comparatively lower even among schools with a DM plan. Only 55.9% reported the presence of Fire and Rescue personnel, 47.1% reported NSS/Scouts/Guides/NCC/SPC involvement, and 32.4% reported the inclusion of Civil Defence Wardens. This indicates that while internal school stakeholders are generally represented, collaboration with external disaster management agencies remains limited.

Overall, the findings suggest that the existence of a DM plan is positively associated with the formation of a comprehensive Disaster Management Committee. Schools with a DM plan demonstrate greater stakeholder representation and preparedness, whereas schools without a DM plan exhibit inadequate committee composition, which may hinder effective disaster risk reduction and emergency response activities. These results emphasize the importance of implementing disaster management plans and ensuring the active participation of both internal and external stakeholders in school disaster management committees.

The involvement of school authorities in disaster preparedness includes hazard assessment, emergency planning, role allocation, drills, staff training, infrastructure safety, coordination

with government and emergency agencies, and continuity planning, but some literature shows that this involvement is often constrained by limited resources, insufficient training, and uneven policy support (Marzban, Dowlati, Moslehi, & Marzaleh , 2025).

4.8 The Availability And Condition Of Emergency Plans In Schools

Availability and Condition of Emergency Plans	Frequency	Percentage
Not Present (≤ 21.75)	16	24.2
Present in Bad Condition (21.76 – 34.00)	42	63.6
Present in Good Condition (> 34.00)	8	12.1
Total	66	100

Table 4.12: The Availability And Condition Of Emergency Plans In Schools

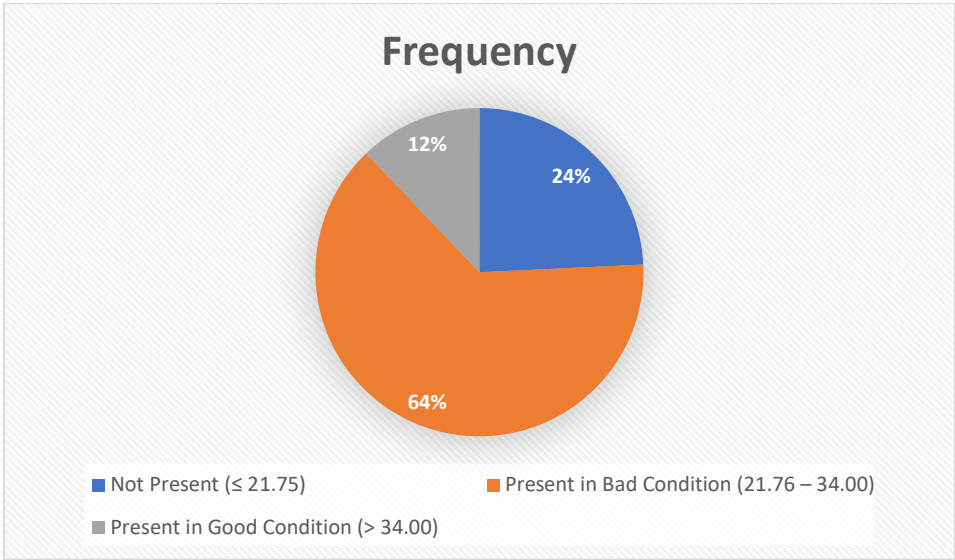


Figure 2: The Availability And Condition Of Emergency Plans In Schools

Table 4.12 presents the availability and condition of emergency plans in the selected schools. The findings reveal that the majority of schools, 42 (63.6%), had emergency plans that were present but in poor condition. This indicates that although emergency planning mechanisms exist in many schools, they may not be adequately maintained, updated, or effectively implemented to support disaster preparedness activities.

Further, 16 schools (24.2%) reported the absence of emergency plans. The lack of emergency plans in nearly one-fourth of the schools is a matter of concern, as such plans are essential for guiding preparedness, response, and recovery activities during emergency situations.

Only 8 schools (12.1%) were found to have emergency plans that were present and in good condition. This comparatively low proportion suggests that a limited number of schools have well-developed and properly maintained emergency planning systems capable of supporting effective disaster management.

Overall, the findings indicate that while emergency plans are available in a considerable number of schools, their quality and condition require significant improvement. The predominance of emergency plans in poor condition, along with the absence of such plans in several schools, highlights the need for regular review, updating, monitoring, and strengthening of emergency planning measures. Improving the quality and effectiveness of emergency plans is essential for enhancing disaster preparedness and ensuring the safety of students, staff, and school infrastructure during disaster events.

In Pakistan, only 35% of schools had emergency communication plans, 31% had continuity plans, and evacuation-route mapping was low at 26%, showing that plan presence does not mean plan completeness (Shah, et al., 2018)

Studies from Tanzania similarly found that schools often had only sketchy or tentative plans, limited by financial constraints, lack of school nurses, weak facilities, and low preparedness awareness (Challe, Mislav, & Boniface)

4.9 The Availability And Condition Of Emergency Plans In Schools

Early Warning Information: Receipt, Understanding, and Response in Schools		LOCATION				
		COASTAL	NEAR COASTAL	PLAIN	HILL	TOTAL
Receives official hazard warnings	Always	4.8(1)	12.5(1)	8.3(2)	23.1(3)	7
	Sometimes	0.0(0)	0.0(0)	12.5(3)	15.4(2)	5
	Rarely	9.5(2)	25.0(2)	20.8(5)	30.8(4)	13
	Never	85.7(18)	62.5(5)	58.3(14)	30.8(4)	41
Receives early warnings from trusted sources	Always	4.8(1)	12.5(1)	8.3(2)	15.4(2)	6
	Sometimes	4.8(1)	0.0(0)	8.3(2)	23.1(3)	6
	Rarely	19.0(4)	50.0(4)	29.2(7)	38.5(5)	20
	Never	71.4(15)	37.5(3)	54.2(13)	23.1(3)	34
Staff assigned to monitor warnings	Always	14.3(3)	12.5(1)	16.7(4)	23.1(3)	11
	Sometimes	0.0(0)	0.0(0)	4.2(1)	30.8(4)	5
	Rarely	19.0(4)	62.5(5)	41.7(10)	23.1(3)	22
	Never	66.7(14)	25.0(2)	37.5(9)	23.1(3)	28
Receives warnings after school hours	Always	4.8(1)	12.5(1)	4.2(1)	7.7(1)	4
	Sometimes	4.8(1)	0.0(0)	8.3(2)	7.7(1)	4
	Rarely	9.5(2)	50.0(4)	16.7(4)	30.8(4)	14
	Never	81.0(17)	37.5(3)	70.8(17)	53.8(7)	44
Warnings communicated to students through school systems	Always	4.8(1)	12.5(1)	0.0(0)	23.1(3)	5
	Sometimes	14.3(3)	0.0(0)	16.7(4)	30.8(4)	11
	Rarely	33.3(7)	62.5(5)	12.5(3)	30.8(4)	19
	Never	47.6(10)	25.0(2)	70.8(17)	15.4(2)	31
Backup method available for warning communication	Always	4.8(1)	0.0(0)	12.5(3)	30.8(4)	8
	Sometimes	9.5(2)	12.5(1)	8.3(2)	3.8(4)	9
	Rarely	14.3(3)	12.5(1)	29.2(7)	7.7(1)	12
	Never	71.4(15)	75.0(6)	50.0(12)	30.8(4)	37
Parents informed when hazards affect school functioning	Always	9.5(2)	0.0(0)	0.0(0)	23.1(3)	5
	Sometimes	4.8(1)	25.0(2)	8.3(2)	15.4(2)	7
	Rarely	38.1(8)	62.5(5)	20.8(5)	15.4(2)	20
	Never	47.6(10)	12.5(1)	70.8(17)	46.2(6)	34
Staff know actions required after receiving warnings	Sometimes	4.8(1)	0.0(0)	4.2(1)	23.1(3)	5
	Rarely	19.0(4)	12.5(1)	29.2(7)	23.1(3)	15
	Never	76.2(16)	87.5(7)	66.7(16)	53.8(7)	46
Staff trained in interpreting hazard warnings	Always	9.5(2)	0.0(0)	0.0(0)	15.4(2)	4
	Sometimes	0.0(0)	12.5(1)	33.3(8)	15.4(2)	11
	Rarely	33.3(7)	37.5(3)	25.0(6)	30.8(4)	20
	Never	57.1(12)	50.0(4)	41.7(10)	38.5(5)	31
School activates evacuation plan after receiving warnings	Always	4.8(1)	0.0(0)	0.0(0)	0.0(0)	1
	Sometimes	4.8(1)	12.5(1)	20.8(5)	15.4(2)	9
	Rarely	14.3(3)	25.0(2)	16.7(4)	38.5(5)	14
	Never	76.2(16)	62.5(5)	62.5(15)	46.2(6)	42
Warning messages	Always	4.8(1)	0.0(0)	0.0(0)	0.0(0)	1
	Sometimes	0.0(0)	12.5(1)	16.7(4)	23.1(3)	8

accessible to all students	Rarely	14.3(3)	37.5(3)	16.7(4)	69.2(9)	19
	Never	81.0(17)	50.0(4)	66.7(16)	7.7(1)	38
Warning system improved based on past experience	Always	0.0(0)	0.0(0)	0.0(0)	0.0(0)	0
	Sometimes	4.8(1)	0.0(0)	12.5(3)	7.7(1)	5
	Rarely	14.3(3)	37.5(3)	29.2(7)	53.8(7)	20
	Never	81.0(17)	62.5(5)	58.3(14)	38.5(5)	41

Table 4.13: The Availability And Condition Of Emergency Plans In Schools

Table 4.13 presents the availability and condition of emergency warning and response systems in schools located in coastal, near coastal, plain, and hill regions. The findings indicate considerable deficiencies in the preparedness and implementation of emergency warning mechanisms across the schools surveyed.

With regard to receiving official hazard warnings, the majority of schools (82.0%, n=41) reported that they never receive official hazard warnings, while only 14.0% (n=7) stated that they always receive such warnings. Similarly, 68.0% (n=34) of the schools reported that they never receive early warnings from trusted sources, indicating a lack of reliable communication channels for disaster-related information.

The data further reveal inadequate monitoring arrangements within schools. Nearly half of the respondents (56.0%, n=28) reported that staff are never assigned to monitor warnings, while only 22.0% (n=11) indicated that such monitoring is always conducted. Likewise, a large proportion of schools (88.0%, n=44) stated that they never receive warnings after school hours, suggesting limited continuity in emergency communication systems.

Communication of warnings to students also appears insufficient. More than three-fifths of the schools (62.0%, n=31) reported that warnings are never communicated through school systems, while only 10.0% (n=5) indicated that warnings are always communicated. In addition, 74.0% (n=37) of schools reported having no backup method for warning communication, highlighting the vulnerability of existing warning systems in the event of communication failures.

The involvement of parents in emergency communication is also limited. Nearly two-thirds of the respondents (68.0%, n=34) reported that parents are never informed when hazards affect school functioning. Furthermore, 92.0% (n=46) of schools indicated that staff do not know the required actions after receiving warnings, demonstrating a serious gap in emergency preparedness and response knowledge.

Training opportunities related to hazard warnings were also found to be inadequate. More than half of the respondents (62.0%, n=31) reported that staff are never trained in interpreting hazard

warnings, whereas only 8.0% (n=4) indicated that such training is always provided. Similarly, 84.0% (n=42) of schools reported that they never activate evacuation plans after receiving warnings, reflecting weak implementation of emergency response procedures.

Regarding accessibility of warning messages, 76.0% (n=38) of schools stated that warning messages are never accessible to all students, which may hinder effective response during emergencies. Additionally, 82.0% (n=41) reported that their warning systems are never improved based on past experiences, suggesting a lack of systematic review and learning from previous disaster events.

Overall, the findings indicate that emergency warning, communication, and response systems in the surveyed schools are generally inadequate. The high proportion of schools reporting the absence of official warnings, trained personnel, evacuation procedures, backup communication methods, and continuous system improvement highlights significant gaps in disaster preparedness. These findings emphasize the need for strengthening school-based emergency management systems through improved warning dissemination, staff training, parental involvement, evacuation planning, and regular evaluation of warning mechanisms to enhance disaster resilience in schools.

4.10 The Physical Safety Condition Of Non-Structural Elements In School Buildings

Non-Structural Safety Conditions in School Buildings		TYPE OF MANGEMENT			TOTAL
		GOVERNMENT	AIDED	PRIVATE	
Stone Wall Cladding Safety	Not present	23.5(4)	17.2(5)	10.0(2)	11
	Present – all units are safely fixed	70.6(12)	82.8(24)	75.0(15)	51
	Present – some units are unsafe	5.9(1)	0.0(0)	15.0(3)	4
	Present but fully unsafe	0	0	0	0
Spalling of Cracked Cement Plaster Safety	Not present	11.8(2)	13.8(4)	10.0(2)	8
	Present – all units are safely fixed	76.5(13)	79.3(23)	85.0(17)	53
	Present – some units are unsafe	11.8(2)	6.9(2)	5.0(1)	5
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Sun Shade Safety Condition	Not present	11.8(2)	17.2(5)	10.0(2)	9
	Present – all units are safely fixed	76.5(13)	79.3(23)	90.0(18)	54
	Present – some units are unsafe	11.8(2)	3.4(1)	0.0(0)	3
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Stretcher Availability	Not present	47.1(8)	48.3(14)	35.0(7)	29
	Present – all units are safely fixed	41.2(7)	48.3(14)	60.0(12)	33
	Present – some units are unsafe	5.9(1)	3.4(1)	0.0(0)	2
	Present but fully unsafe	5.9(1)	0.0(0)	5.0(1)	2
Ladder Availability	Not present	35.3(6)	27.6(8)	20.0(4)	18
	Present – all units are safely fixed	52.9(9)	69.0(20)	65.0(13)	42
	Present – some units are unsafe	11.8(2)	3.4(1)	10.0(2)	5
	Present but fully unsafe	0.0(0)	0.0(0)	5.0(1)	1
Thick Rope	Not present	35.3(6)	17.2(5)	30.0(6)	17
	Present – all units are safely fixed	58.8(10)	69.0(20)	65.0(13)	43

	Present – some units are unsafe	5.9(1)	13.8(4)	0.0(0)	5
	Present but fully unsafe	0.0(0)	0.0(0)	5.0(1)	1
Torch Availability	Not present	29.4(5)	17.2(5)	25.0(5)	15
	Present – all units are safely fixed	64.7(11)	75.9(22)	70.0(14)	47
	Present – some units are unsafe	5.9(1)	3.4(1)	0.0(0)	2
	Present but fully unsafe	0.0(0)	3.4(1)	5.0(1)	2
First-Aid Box	Not present	5.9(1)	3.4(1)	5.0(1)	3
	Present – all units are safely fixed	88.2(15)	82.8(24)	85.0(17)	56
	Present – some units are unsafe	0.0(0)	13.8(4)	5.0(1)	5
	Present but fully unsafe	5.9(1)	0.0(0)	5.0(1)	2
Temporary Shelter/Tent Availability	Not present	41.2(7)	31.0(9)	35.0(7)	23
	Present – all units are safely fixed	58.8(10)	58.6(17)	55.0(11)	38
	Present – some units are unsafe	0.0(0)	10.3(3)	5.0(1)	4
	Present but fully unsafe	0.0(0)	0.0(0)	5.0(1)	1
Fire Extinguisher Availability	Not present	5.9(1)	17.2(5)	5.0(1)	7
	Present – all units are safely fixed	88.2(15)	62.1(18)	80.0(16)	49
	Present – some units are unsafe	0.0(0)	17.2(5)	10.0(2)	7
	Present but fully unsafe	5.9(1)	3.4(1)	5.0(1)	3
Emergency Exit Sign Boards Availability	Not present	29.4(5)	51.7(15)	45.0(9)	29
	Present – all units are safely fixed	58.8(10)	37.9(11)	45.0(9)	30
	Present – some units are unsafe	5.9(1)	10.3(3)	5.0(1)	5
	Present but fully unsafe	5.9(1)	0.0(0)	5.0(1)	2
Assembly Point Availability	Not present	11.8(2)	10.3(3)	10.0(2)	7
	Present – all units are safely fixed	70.6(12)	79.3(23)	85.0(17)	52
	Present – some units are unsafe	17.6(3)	10.3(3)	0.0(0)	6
	Present but fully unsafe	0.0(0)	0.0(0)	5.0(1)	1

Bookshelves Availability	Not present	5.9(1)	6.9(2)	10.0(2)	5
	Present – all units are safely fixed	88.2(15)	82.8(24)	90.0(18)	57
	Present – some units are unsafe	5.9(1)	10.3(3)	0.0(0)	4
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Storage Cabinet Availability	Not present	5.9(1)	13.8(4)	15.0(3)	8
	Present – all units are safely fixed	82.4(14)	79.3(23)	85.0(17)	54
	Present – some units are unsafe	11.8(2)	6.9(2)	0.0(0)	4
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Display Cupboards / Almirahs Availability	Not present	5.9(1)	6.9(2)	10.0(2)	5
	Present – all units are safely fixed	76.5(13)	93.1(27)	85.0(17)	57
	Present – some units are unsafe	17.6(3)	0.0(0)	5.0(1)	4
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Filing Cabinets Availability	Not present	17.6(3)	17.2(5)	15.0(3)	11
	Present – all units are safely fixed	76.5(13)	72.4(21)	80.0(16)	50
	Present – some units are unsafe	0.0(0)	10.3(3)	5.0(1)	4
	Present but fully unsafe	5.9(1)	0.0(0)	0.0(0)	1
Laboratory Equipment Availability	Not present	17.6(3)	20.7(6)	10.0(2)	11
	Present – all units are safely fixed	70.6(12)	69.0(20)	85.0(17)	49
	Present – some units are unsafe	0.0(0)	10.3(3)	5.0(1)	4
	Present but fully unsafe	11.8(2)	0.0(0)	0.0(0)	2
Computer Equipment Availability	Not present	5.9(1)	13.8(4)	10.0(2)	7
	Present – all units are safely fixed	76.5(13)	86.2(25)	85.0(17)	55
	Present – some units are unsafe	11.8(2)	0.0(0)	5.0(1)	3
	Present but fully unsafe	5.9(1)	0.0(0)	0.0(0)	1
Black/Green Boards Availability	Not present	11.8(2)	3.4(1)	5.0(1)	4
	Present – all units are safely fixed	76.5(13)	93.1(27)	90.0(18)	58

	Present – some units are unsafe	11.8(2)	3.4(1)	5.0(1)	4
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Ceiling Fan Availability	Not present	5.9(1)	3.4(1)	5.0(1)	3
	Present – all units are safely fixed	82.4(14)	96.6(28)	95.0(19)	61
	Present – some units are unsafe	5.9(1)	0.0(0)	0.0(0)	1
	Present but fully unsafe	5.9(1)	0.0(0)	0.0(0)	1
Additional Storage Cabinets Availability	Not present	23.5(4)	3.4(1)	15.0(3)	8
	Present – all units are safely fixed	70.6(12)	89.7(26)	80.0(16)	54
	Present – some units are unsafe	5.9(1)	6.9(2)	5.0(1)	4
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Speaker Devices Availability	Not present	17.6(3)	6.9(2)	5.0(1)	6
	Present – all units are safely fixed	82.4(14)	86.2(25)	95.0(19)	58
	Present – some units are unsafe	0.0(0)	6.9(2)	0.0(0)	2
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Computers, Printers, and Photocopy Machines Availability	Not present	5.9(1)	6.9(2)	5.0(1)	4
	Present – all units are safely fixed	82.4(14)	86.2(25)	85.0(17)	56
	Present – some units are unsafe	11.8(2)	6.9(2)	10.0(2)	6
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Moveable Wooden Partition Availability	Not present	29.4(5)	51.7(15)	75.0(15)	35
	Present – all units are safely fixed	64.7(11)	44.8(13)	25.0(5)	29
	Present – some units are unsafe	5.9(1)	3.4(1)	0.0(0)	2
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Light Fixtures Availability	Not present	11.8(2)	3.4(1)	10.0(2)	5
	Present – all units are safely fixed	82.4(14)	93.1(27)	85.0(17)	58
	Present – some units are unsafe	5.9(1)	3.4(1)	5.0(1)	3
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0

Coolers Availability	Not present	47.1(8)	51.7(15)	55.0(11)	34
	Present – all units are safely fixed	41.2(7)	37.9(11)	40.0(8)	26
	Present – some units are unsafe	11.8(2)	10.3(3)	5.0(1)	6
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Water Tank Availability	Not present	5.9(1)	6.9(2)	5.0(1)	4
	Present – all units are safely fixed	82.4(14)	93.1(27)	85.0(17)	58
	Present – some units are unsafe	11.8(2)	0.0(0)	5.0(1)	3
	Present but fully unsafe	0.0(0)	0.0(0)	5.0(1)	1
Flower Pots Availability	Not present	5.9(1)	3.4(1)	10.0(2)	4
	Present – all units are safely fixed	88.2(15)	89.7(26)	80.0(16)	57
	Present – some units are unsafe	5.9(1)	6.9(2)	10.0(2)	5
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
Wall Shelves Availability	Not present	5.9(1)	3.4(1)	20.0(4)	6
	Present – all units are safely fixed	94.1(16)	89.7(26)	80.0(16)	58
	Present – some units are unsafe	0.0(0)	3.4(1)	0.0(0)	1
	Present but fully unsafe	0.0(0)	3.4(1)	0.0(0)	1
Picture Frames Availability	Not present	11.8(2)	3.4(1)	5.0(1)	4
	Present – all units are safely fixed	82.4(14)	86.2(25)	90.0(18)	57
	Present – some units are unsafe	0.0(0)	10.3(3)	5.0(1)	4
	Present but fully unsafe	5.9(1)	0.0(0)	0.0(0)	1
Wall-Mounted Cabinets Availability	Not present	17.6(3)	10.3(3)	20.0(4)	10
	Present – all units are safely fixed	82.4(14)	82.8(24)	75.0(15)	53
	Present – some units are unsafe	0.0(0)	6.9(2)	0.0(0)	2
	Present but fully unsafe	0.0(0)	0.0(0)	5.0(1)	1
Wall-Mounted Gadgets Availability	Not present	23.5(4)	3.4(1)	20.0(4)	9
	Present – all units are safely fixed	76.5(13)	82.8(24)	70.0(14)	51

	Present – some units are unsafe	0.0(0)	13.8(4)	10.0(2)	6
	Present but fully unsafe	0.0(0)	0.0(0)	0.0(0)	0
LCD TV/Equipment Availability	Not present	35.3(6)	27.6(8)	15.0(3)	17
	Present – all units are safely fixed	58.8(10)	55.2(16)	60.0(12)	38
	Present – some units are unsafe	5.9(1)	10.3(3)	25.0(5)	9
	Present but fully unsafe	0.0(0)	6.9(2)	0.0(0)	2
Wall-Mounted Water Purifier (Aqua Guard) Availability	Not present	11.8(2)	6.9(2)	5.0(1)	5
	Present – all units are safely fixed	82.4(14)	75.9(22)	90.0(18)	54
	Present – some units are unsafe	0.0(0)	17.2(5)	5.0(1)	6
	Present but fully unsafe	5.9(1)	0.0(0)	0.0(0)	1

Table 4.14: The Physical Safety Condition Of Non-Structural Elements In School Buildings

Table 4.14 presents the physical safety condition of non-structural elements in school buildings according to the type of management (Government, Aided, and Private). The findings provide important information regarding the availability and safety status of various non-structural components and emergency-related resources within schools.

The results indicate that most schools reported the presence of non-structural elements in a safe condition. With regard to stone wall cladding safety, the majority of schools (85.0%, n=51) reported that all units were safely fixed, while only a small proportion (13.0%, n=8) indicated that some units were unsafe. Similarly, spalling or cracked cement plaster was reported as safely maintained in 88.3% (n=53) of schools, and sunshade safety conditions were considered safe in 85.0% (n=51) of schools.

The availability of emergency response equipment was generally satisfactory. Stretchers were safely available in 55.0% (n=33) of schools, whereas 40.0% (n=24) reported that stretchers were not present. Ladders were safely available in 70.0% (n=42) of schools, while thick ropes were safely available in 71.7% (n=43) of schools. A similar trend was observed for torches, with 78.3% (n=47) of schools reporting that all units were safely maintained.

Regarding first-aid and emergency shelter facilities, first-aid boxes were safely available in 91.7% (n=55) of schools, demonstrating a high level of preparedness for minor emergencies. Temporary shelters or tents were safely available in 63.3% (n=38) of schools, while

approximately one-third of the schools lacked such facilities. Fire extinguishers were safely available in 81.7% (n=49) of schools, indicating that most schools had adequate fire safety provisions.

The availability of emergency guidance and evacuation infrastructure was relatively encouraging. Emergency exit signboards were safely available in 80.0% (n=48) of schools, while assembly points were present in 65.0% (n=39) of schools. However, a substantial proportion of schools still lacked designated assembly points, which may hinder organized evacuation during emergencies.

Concerning educational infrastructure and storage facilities, the majority of schools reported safe availability of bookshelves (95.0%, n=57), storage cabinets (85.0%, n=51), display cupboards/almirahs (95.0%, n=57), and filing cabinets (83.3%, n=50). These findings suggest that most schools maintain classroom and office furnishings in a secure manner that minimizes potential hazards.

Laboratory and technological resources also demonstrated satisfactory safety conditions. Laboratory equipment was safely available in 81.7% (n=49) of schools, while computer equipment was safely available in 90.0% (n=54) of schools. Similarly, black/green boards were safely fixed in 93.3% (n=56) of schools, reflecting adequate maintenance of essential educational facilities.

The findings further indicate that ceiling fans were safely installed in 95.0% (n=57) of schools, representing one of the highest levels of safety among the non-structural elements assessed. Additional storage cabinets were safely available in 90.0% (n=54) of schools, while speaker devices and computers, printers, and photocopy machines were safely maintained in 96.7% (n=58) and 93.3% (n=56) of schools, respectively.

With regard to classroom infrastructure, moveable wooden partitions were safely available in 48.3% (n=29) of schools, while nearly one-third reported their absence. Light fixtures were safely fixed in 96.7% (n=58) of schools, indicating strong compliance with safety standards. Coolers were safely available in only 43.3% (n=26) of schools, and nearly half of the schools reported that coolers were not present.

Utility-related facilities also showed generally positive safety conditions. Water tanks were safely fixed in 96.7% (n=58) of schools where they were available. Likewise, flower pots were safely maintained in 95.0% (n=57) of schools, while wall shelves were safely fixed in 96.7%

(n=58) of schools. Picture frames, wall-mounted cabinets, and wall-mounted gadgets were safely installed in 95.0% (n=57), 81.7% (n=49), and 85.0% (n=51) of schools, respectively.

Regarding electronic display and water purification facilities, LCD televisions or projectors were safely available in 63.3% (n=38) of schools, whereas over one-fourth reported their absence. Wall-mounted water purifiers (Aqua Guards) were safely available in 90.0% (n=54) of schools, indicating adequate provision of safe drinking water facilities.

Overall, the findings suggest that the majority of non-structural elements in the surveyed schools are available and maintained in a safe condition. Essential safety equipment such as first-aid boxes, fire extinguishers, emergency exit signboards, laboratory equipment, and communication devices were reported to be adequately secured in most schools. Nevertheless, certain facilities, including stretchers, temporary shelters, assembly points, moveable partitions, coolers, and LCD/projector systems, were either unavailable or insufficiently provided in a notable proportion of schools. These findings highlight the need for continuous monitoring, maintenance, and upgrading of non-structural safety measures to enhance disaster preparedness and ensure a safer school environment.

CHAPTER 5

FINDINGS, SUGGESTION AND CONCLUSION

5.1 Findings

The present study assessed the level of disaster preparedness among schools in Trivandrum district by examining the involvement of school authorities, the availability and condition of emergency plans, the effectiveness of early warning systems, and the physical safety condition of non-structural elements within school buildings. The findings indicate that although schools have made notable progress in several aspects of disaster preparedness, important gaps continue to exist in the practical implementation and regular maintenance of preparedness measures.

The findings reveal that disaster preparedness among schools is at a moderate level, where several schools have initiated disaster risk reduction measures, but comprehensive preparedness has not yet been achieved across all educational institutions. The study found that more than half of the schools possess a Disaster Management Plan, indicating that awareness regarding disaster preparedness has improved among school administrations. However, a considerable number of schools either do not have a disaster management plan or the respondents were unaware of its existence. This suggests that disaster management planning has not been institutionalized uniformly across schools and that policy implementation differs considerably between institutions.

The study further found that the involvement of school authorities in disaster preparedness varies considerably. While many schools have appointed teachers responsible for safety management and a significant proportion of teachers have received first-aid training, several important preparedness activities remain inadequate. The annual revision of disaster management plans, regular conduct of mock drills, allocation of financial resources for preparedness activities, maintenance of evacuation procedures, and monthly disaster awareness programmes were found to be insufficient in many schools. These findings indicate that preparedness activities are often undertaken as one-time initiatives rather than continuous institutional practices. Disaster preparedness requires regular monitoring, updating, and practice to remain effective, and the absence of these components reduces the operational readiness of schools during emergencies.

An encouraging finding of the study is the relatively high compliance with structural safety requirements. Most schools reported following the National Building Code and possessing annual building safety certificates. This demonstrates that schools have shown greater attention toward infrastructure safety than toward operational disaster preparedness. Similarly,

community participation in preparedness activities was observed in many schools, indicating that schools have begun collaborating with parents, local communities, and external agencies in promoting disaster preparedness. Such collaboration is important because disaster risk reduction cannot be achieved through schools alone but requires the collective participation of different stakeholders.

The assessment of emergency plans indicates that although preparedness mechanisms are available in many schools, their operational condition remains a matter of concern. The majority of schools were categorized under the "Present but in Bad Condition" category, while only a limited number maintained emergency preparedness measures in good operational condition. Furthermore, nearly one-fourth of the schools lacked several essential preparedness arrangements altogether. This finding suggests that many schools have developed preparedness measures primarily to comply with policy requirements rather than ensuring that these measures remain functional and effective during emergencies. Emergency plans should be living documents that are periodically reviewed, updated, and tested through practical exercises. The absence of regular maintenance significantly reduces the effectiveness of disaster preparedness systems during actual disaster situations.

The findings also demonstrate that schools have established basic mechanisms for receiving official hazard warning information. The majority of respondents reported that schools regularly receive official hazard warnings and that teachers generally possess adequate knowledge to understand and communicate warning messages. Most schools also reported activating emergency procedures when hazard warnings are received, indicating that schools have developed an initial response capacity for dealing with disaster situations. These findings suggest that communication between disaster management authorities and educational institutions has improved over the years.

Despite these positive developments, the study also identified several weaknesses within the early warning system. Not all schools have designated personnel responsible for monitoring hazard warnings, and regular orientation programmes related to early warning communication are not conducted consistently. Backup communication systems were also absent in several schools, increasing the possibility of communication failure during emergencies. Since early warning systems depend not only on receiving information but also on understanding, disseminating, and acting upon warning messages within a limited period, strengthening these

institutional arrangements remains an important priority for improving school disaster preparedness.

The assessment of the physical safety condition of non-structural elements provides another important dimension of disaster preparedness. The findings indicate that most schools have maintained architectural components such as stone wall cladding, cracked cement plaster, and sunshades in satisfactory condition. The majority of schools also reported that classroom furniture, bookshelves, cupboards, laboratory equipment, computer facilities, ceiling fans, lighting systems, water tanks, and wall-mounted equipment were properly fixed and maintained. Proper maintenance of these non-structural components plays a significant role in reducing injuries during disasters such as earthquakes, cyclones, heavy rainfall, and strong winds.

Similarly, the availability of emergency safety equipment showed encouraging results in several areas. Most schools reported the availability of first-aid boxes, fire extinguishers, torchlights, emergency ladders, and thick ropes in safe working condition. However, the availability of stretchers was considerably lower than other emergency equipment, indicating an important gap in evacuation preparedness. Since stretchers are essential for safely evacuating injured students during emergencies, their absence may limit the response capacity of schools during disaster situations. The findings therefore suggest that while schools have prioritized the provision of basic emergency equipment, additional efforts are required to ensure the availability of complete rescue resources in every institution.

The demographic characteristics of the schools included in the study also provide useful insights into disaster preparedness across different educational settings. The sample included government, aided, and private schools located in coastal, near-coastal, plain, and hilly terrains, thereby representing different hazard contexts within Trivandrum district. The analysis indicates that disaster preparedness practices vary according to geographical location and management category. Schools located in hazard-prone areas and institutions with better administrative support generally demonstrated comparatively higher levels of preparedness than others. This finding highlights the influence of local risk conditions, institutional capacity, and administrative commitment on disaster preparedness practices.

When the findings are viewed collectively, it becomes evident that disaster preparedness among schools in Trivandrum district is progressing in a positive direction but has not yet reached the level of comprehensive preparedness envisioned under the National School Safety Policy

Guidelines and the Sendai Framework for Disaster Risk Reduction. Schools have demonstrated better compliance with structural safety measures and hazard communication systems than with routine preparedness activities such as mock drills, disaster planning, financial allocation, and regular preparedness training. This indicates that schools tend to emphasize infrastructure safety while comparatively less attention is given to preparedness planning, capacity building, and continuous practice.

The findings of the present study are largely consistent with previous research conducted in India and internationally. Similar studies have reported that although disaster management policies and school safety guidelines are available, their practical implementation remains inconsistent across educational institutions. Previous researchers have identified gaps in regular mock drills, preparedness planning, teacher training, budget allocation, and emergency management, all of which are also reflected in the findings of the present study. At the same time, the relatively good performance of schools regarding structural safety, community participation, teacher awareness, and early warning communication demonstrates that disaster preparedness initiatives implemented by government agencies and educational authorities have begun producing positive outcomes.

Overall, the study concludes that schools in Trivandrum district possess the basic foundation required for disaster preparedness; however, preparedness remains uneven and requires significant strengthening through regular monitoring, institutional commitment, continuous training, effective implementation of disaster management plans, improved emergency resource allocation, periodic safety audits, and stronger coordination among schools, disaster management authorities, local governments, and community stakeholders. Strengthening these dimensions will contribute not only to safer educational institutions but also to the development of a culture of disaster resilience among children, teachers, families, and the wider community, thereby supporting sustainable disaster risk reduction in the district.

5.2 Suggestions

Based on the findings presented in Chapter Four against each of the four specific objectives, this chapter sets out suggestions to strengthen disaster preparedness among schools in Trivandrum district. Rather than treating each objective as an isolated compliance requirement, the suggestions below are framed around the specific gap identified for that objective, so that

improvement efforts can be targeted where they will have the greatest effect rather than spread evenly and thinly across every area.

5.2.1 Suggestions Related To Objective One: Involvement Of School Authorities In Disaster Preparedness

Objective: *“To assess the involvement of school authorities in disaster preparedness.”*

Internal stakeholders such as the Principal, Teachers, and Parent Representatives are already well represented on Disaster Management Committees in schools that have a plan in place, but participation from external emergency-response agencies such as Fire and Rescue, Civil Defence Wardens, and NSS/Scouts/Guides/NCC/SPC remains consistently weaker even in these same schools. This suggests that the priority for this objective is not to build internal governance from scratch, since it is already reasonably functional, but to extend it outward to the agencies a school would actually depend on during a real emergency.

It is suggested that external agency representation be made a mandatory, standing component of every school Disaster Management Committee rather than an optional or occasional inclusion, so that these agencies are named members with defined responsibilities rather than guests invited only when convenient. Alongside this, schools could establish formal coordination agreements, such as memoranda of understanding or annual coordination calendars, with their local Fire and Rescue unit, Civil Defence Wardens, and health department, so that the relationship is documented and does not depend on the initiative of any one individual staff member.

Since Kerala already maintains a decentralised disaster management structure involving panchayats, municipalities, and the District Disaster Management Authority, schools would benefit from being formally plugged into this existing local government machinery rather than attempting to build external coordination independently. A designated liaison officer from the Fire and Rescue service or Civil Defence unit could be assigned to a cluster of nearby schools, so that responsibility for outreach does not rest solely with the school itself. It is further suggested that at least one joint drill per year be conducted involving these external agencies directly, so that coordination is practiced under realistic conditions rather than existing only as a name on a committee list, and that external stakeholder participation be recorded as a measurable indicator in future school safety audits so that progress on this specific gap can be tracked over time.

5.2.2 Suggestions Related To Objective Two: Availability And Condition Of Emergency Plans In Schools

Objective: *“To examine the availability and condition of emergency plans in schools.”*

Since the majority of schools already have an emergency plan on record, and the dominant problem is poor condition rather than outright absence, suggestions for this objective should prioritise improving and maintaining existing plans over creating entirely new ones. It is suggested that a mandatory annual review and update cycle be introduced for every school emergency plan, led by the Disaster Management Committee itself rather than left to individual staff discretion, so that plans do not quietly become outdated between major incidents.

A standardised safety-audit checklist, ideally issued at the state or district level, would allow plan quality to be assessed consistently across schools rather than depending on each school's own interpretation of what a good plan looks like. This checklist should specifically address the gaps identified in the literature reviewed for this study, where schools were found to have basic plans and evacuation maps but to lack hazard-specific response protocols, annual mock-drill calendars, and regular safety audits; building these three elements into the checklist would directly target the same weaknesses found in the present sample. Mock drills should be tied directly to the plan review cycle, so that a plan is tested against a simulated scenario rather than being reviewed only as a paper exercise.

Given that poor-condition plans affect nearly two-thirds of schools while outright absence affects roughly a quarter, it is suggested that the first phase of support and funding be directed toward upgrading plans already rated as present but in bad condition, since this will reach a substantially larger number of schools per unit of effort than focusing only on the smaller group with no plan at all. For schools with no plan whatsoever, a simplified starter template could be issued as an interim measure, to be refined and expanded through the same review and audit cycle applied to every other school, so that this smaller group is not left behind while broader quality improvements are rolled out elsewhere.

5.2.3 Suggestions Related To Objective Three: Early Warning Information Understanding, And Response

Objective: *“To assess how early warning information related to hazards is received, understood, and acted upon within schools.”*

This objective produced the most serious findings of the entire study, with a majority of schools reporting that they never receive official hazard warnings, never receive warnings from trusted

sources, and never assign staff to monitor for them, and with the single largest gap being that most schools do not know what actions staff should take once a warning is actually received. Suggestions for this objective therefore need to address the full chain from receiving a warning through to acting on it, rather than any single link in isolation.

It is suggested that every school name a specific staff member, along with a designated backup, who is responsible for receiving and monitoring hazard warnings, including outside of regular school hours, since the data show that continuity after hours is currently one of the weakest points in the system. Alongside a named official channel, schools should establish at least one backup method of communication, such as an SMS alert group, a community radio link, or a direct liaison with the local self-government's own early warning arrangements, so that a single point of failure does not leave a school uninformed.

A standard protocol should be introduced for communicating warnings onward to students and for informing parents when a hazard affects school functioning, replacing the current ad hoc approach with a documented and repeatable procedure. Regular staff training specifically focused on interpreting hazard warnings and on the actions expected afterward would directly address the finding that most staff currently do not know what to do once a warning arrives; this training would draw on evidence in the literature reviewed for this study showing that regular, practiced drills are associated with measurably better outcomes, including fewer casualties in schools that conduct them consistently. Periodic simulation exercises should be run that begin from a simulated warning and continue through to the activation of the evacuation plan, so that schools practice the complete sequence rather than only isolated pieces of it, and each school's warning system should be reviewed and adjusted after any real hazard event or major drill, closing the loop that most schools currently report is missing entirely.

5.2.4 Suggestions Related To Objective Four: Physical Safety Condition Of Non-Structural Elements In School Buildings

Objective: *“To examine the physical safety condition of non-structural elements in school buildings.”*

General non-structural safety across the sample is comparatively strong, with most everyday classroom furnishings and utilities well maintained, but a specific cluster of disaster-response equipment, including stretchers, emergency exit signage, temporary shelters, ladders, and thick rope, stands out as the weakest category. Suggestions for this objective should therefore

concentrate resources on this specific equipment rather than spreading effort evenly across all non-structural items.

It is suggested that procurement and repair be prioritised first for stretchers, emergency exit signage, temporary shelters, ladders, and thick rope in schools currently reporting these as absent or unsafe, since these are the items a school would most directly depend on during an actual evacuation or rescue situation. Given that aided and rural schools are likely to have more limited budgets for this kind of equipment, partnerships with local disaster management authorities or non-governmental organisations could be pursued specifically to support these costs, so that resource constraints do not become the reason such equipment continues to go unaddressed.

A separate non-structural safety audit, distinct from routine general facility maintenance checks, should be introduced so that response-critical equipment is inspected on its own terms rather than folded into a broader inspection where it may be overlooked. It is further suggested that the status of this equipment be recorded in the same tracking system used for reviewing emergency plans under Objective Two, so that the Disaster Management Committee can monitor plans and the equipment those plans depend on together, rather than treating them as two unconnected compliance exercises.

Across all four objectives committees, plans, warning systems, and equipment tend to exist on paper more consistently than they function in practice, whether that means a plan that is present but poorly maintained, a warning system that exists but is rarely acted upon, or equipment that is procured but not specifically tracked for readiness. The overarching suggestion arising from this study is therefore to bring these four areas together under a single periodic review cycle at the school or district level, coordinated by the Disaster Management Committee, rather than continuing to treat committee formation, plan maintenance, warning response, and equipment readiness as four separate and unconnected compliance requirements. Approaching them as one integrated system would allow schools and the district administration to see where the weakest link in the overall chain currently sits, and to direct limited resources toward whichever of these four areas needs it most at any given time, rather than distributing effort evenly regardless of where the actual gap lies.

5.3 Conclusion

The present study assessed the level of disaster preparedness among schools in Trivandrum district by examining the involvement of school authorities, the availability and condition of emergency plans, the effectiveness of early warning systems, and the physical safety condition of non-structural elements within school buildings. The study was undertaken with the understanding that schools are not only centres of learning but also institutions responsible for ensuring the safety and well-being of children, who are among the most vulnerable groups during disasters. As educational institutions frequently serve as emergency shelters and community support centres during disaster situations, strengthening school preparedness is an essential component of disaster risk reduction.

The findings of the study indicate that schools in Trivandrum district have made encouraging progress in implementing disaster preparedness measures. Most schools have adopted several preparedness initiatives, including the development of disaster management plans, establishment of disaster management committees, implementation of early warning communication systems, maintenance of structural and non-structural safety measures, and provision of essential emergency equipment. These initiatives demonstrate that awareness regarding school safety and disaster preparedness has improved among educational institutions.

However, the study also identified several areas that require further attention. Although disaster management plans are available in many schools, regular updating, periodic review, and practical implementation through mock drills and emergency exercises remain inadequate. Similarly, while schools generally receive official early warning information and communicate warnings effectively, the availability of backup communication systems, regular training programmes, and clearly defined response mechanisms requires further strengthening. The assessment of non-structural safety conditions revealed that most schools maintain their buildings and equipment in satisfactory condition, although gaps still exist in the availability of certain emergency response resources, particularly rescue equipment such as stretchers.

The study further indicates that disaster preparedness varies across schools depending on their management, geographical location, and local hazard exposure. Schools located in different terrains and operating under different administrative systems demonstrate varying levels of preparedness, suggesting that institutional capacity and local context influence the implementation of disaster risk reduction measures. These findings highlight the importance of

adopting a context-specific approach to school disaster preparedness while ensuring that minimum safety standards are achieved across all educational institutions.

The findings also reinforce the importance of collaborative disaster management within schools. Effective preparedness cannot be achieved solely through infrastructure development or policy formulation. It requires the active participation of school authorities, teachers, students, parents, local communities, government departments, and emergency response agencies. Disaster preparedness should therefore be viewed as a continuous process involving planning, training, awareness creation, monitoring, evaluation, and regular improvement rather than a one-time activity undertaken to comply with policy requirements.

The present study contributes to the growing body of knowledge on school disaster preparedness by providing empirical evidence from schools in Trivandrum district. The findings support the objectives of national and international disaster risk reduction frameworks, including the Disaster Management Act, 2005, the National School Safety Policy Guidelines, 2016, and the Sendai Framework for Disaster Risk Reduction, which emphasize creating safe, resilient, and disaster-ready educational institutions.

In conclusion, while the overall disaster preparedness of schools in Trivandrum district can be considered **moderately satisfactory**, achieving comprehensive school safety requires sustained commitment from educational authorities, school management, disaster management agencies, and the community. Strengthening disaster management planning, enhancing capacity-building programmes, conducting regular mock drills, improving emergency communication systems, ensuring the maintenance of safety infrastructure, and promoting continuous monitoring and evaluation will significantly improve the resilience of schools. Investing in school disaster preparedness not only protects students, teachers, and educational infrastructure but also contributes to building disaster-resilient communities and supporting sustainable development in the long term.

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Annexure

RESEARCH TOOL — DISASTER PREPAREDNESS ASSESSMENT QUESTIONNAIRE

Assessing Disaster Preparedness among Schools in Trivandrum District

Please tick (✓) the option that best applies, or fill in the blank space provided, for each item below.

PART I: SCHOOL PROFILE

1. Name of the School:

Response: _____

2. Age of the School:

Response: _____

3. Location of the School:

Response: _____

4. Number of Students:

Response: _____

5. Number of Teachers:

Response: _____

6. Location (Terrain):

☐ Coastal ☐ Near Coastal ☐ Plain ☐ Hill

(Reconstructed from the analysis in Chapter Four — please confirm these match the original dropdown options.)

7. Type of Management:

☐ Government ☐ Aided ☐ Private

(Reconstructed from the analysis in Chapter Four — please confirm these match the original dropdown options.)

8. School Level:

Options: _____

9. Board of School:

Options: _____

10. Has the school experienced any disaster before? (tick all that apply)

☐ No Experience ☐ Cyclone ☐ Heavy Rain ☐ Tsunami ☐ Coastal Erosion
☐ Landslide ☐ Earthquake

PART II: DISASTER MANAGEMENT PLANNING AND COMMITTEE

1. Does the school have a Disaster Management Plan?

☐ Yes ☐ No ☐ Not Aware

1a. If No / Not Aware, please share the reasons why the school does not have a Disaster Management Plan (if Yes, type NIL):

Response: _____

1b. Are there any specific difficulties or limitations that prevent the school from preparing a Disaster Management Plan?

Response: _____

2. Is the Disaster Management Plan annually maintained and dated?

☐ Yes ☐ No ☐ Not Aware

3. Does a formal Disaster Management Committee (DMC) exist in the school?

☐ Yes ☐ No ☐ Not Aware

3a. If No / Not Aware, please explain the reasons or challenges faced in forming a formal Disaster Management Committee (if Yes, type NIL):

Response: _____

4. Is the Principal a member of the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

5. Are teachers included as members of the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

6. Is there a parent representative in the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

7. Is there a student representative in the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

8. Are the roles and responsibilities of Disaster Management Committee members clearly defined and documented?

☐ Yes ☐ No ☐ Not Aware

9. Does the school engage students in age-appropriate Disaster Risk Reduction (DRR) education?

☐ Yes ☐ No ☐ Not Aware

10. Is the PTA President a member of the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

11. Are NSS / Scouts / Guides / NCC / SPC students included in the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

12. Are both girl and boy student representatives included in the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

13. Is there a representative from the Fire and Rescue Services in the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

14. Is there a representative from the Health Department in the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

15. Is there a Civil Defence Warden included in the Disaster Management Committee?

☐ Yes ☐ No ☐ Not Aware

16. Is there an annual calendar for mock drills and preparedness activities maintained and communicated?

☐ Yes ☐ No ☐ Not Aware

16a. *If No / Not Aware, please explain what factors have prevented the preparation and documentation of an annual calendar for mock drills and disaster preparedness activities (if Yes, type NIL):*

Response: _____

17. Is there a specific budget allocation for disaster preparedness activities?

☐ Yes ☐ No ☐ Not Aware

17a. *If there is no specific budget allocation, kindly explain the reasons or constraints faced by the school in allocating funds for disaster preparedness activities (if Yes, type NIL):*

Response: _____

18. Does the school have a policy for safely handing over students to guardians and transferring them to temporary shelters during disasters?

☐ Yes ☐ No ☐ Not Aware

19. Are rescue and evacuation routes clearly displayed in the school?

☐ Yes ☐ No ☐ Not Aware

20. Does the school follow National Building Codes for safety?

☐ Yes ☐ No ☐ Not Aware

21. Does the school obtain a building fitness/safety certificate before the start of each academic year?

☐ Yes ☐ No ☐ Not Aware

22. Does the Disaster Management Plan include provisions for mock drill training?

☐ Yes ☐ No ☐ Not Aware

23. Has the school adopted child-friendly and inclusive construction methods?

☐ Yes ☐ No ☐ Not Aware

24. Are school authorities aware of the possible disasters that could affect the school?

☐ Yes ☐ No ☐ Not Aware

25. Do all teachers know the safe zones and safe centres in the school area?

☐ Yes ☐ No ☐ Not Aware

26. Have all teachers received first aid training?

☐ Yes ☐ No ☐ Not Aware

27. Have all teachers received swimming training?

☐ Yes ☐ No ☐ Not Aware

28. Have all teachers received training on wearing and using life jackets?

☐ Yes ☐ No ☐ Not Aware

29. Have teachers been trained to provide counselling after disasters?

☐ Yes ☐ No ☐ Not Aware

30. Does the school administration conduct disaster awareness programmes every month?

☐ Yes ☐ No ☐ Not Aware

31. Does the School Development Plan give importance to school safety?

☐ Yes ☐ No ☐ Not Aware

32. Does the school involve community members in programmes such as rallies or seminars?

☐ Yes ☐ No ☐ Not Aware

33. Is there a designated teacher in charge of school safety?

☐ Yes ☐ No ☐ Not Aware

34. Does the school regularly monitor disaster warnings and alerts?

☐ Yes ☐ No ☐ Not Aware

PART III: SCHOOL SAFETY INFRASTRUCTURE AND SYSTEMS

1. Are evacuation routes clearly marked?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

2. Does the school have any early warning system?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

2a. *If not present, how does the school receive and communicate emergency alerts to students and staff?*

Response: _____

3. Does the early warning system communicate alerts to students?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

4. Does the school have access to emergency vehicles?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

5. Does the school ensure safety and security for students with special needs (differently abled)?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

6. Does the Disaster Management Plan include schedules for training programmes for students and teachers?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

7. Does the building have heat- and fire-resistant protection?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

8. Is the building certified by an engineer before construction or expansion (upward/sideways)?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

9. Does every classroom have at least two doors?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

10. Do classroom doors open outward or towards the veranda?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

11. Does the early warning system cover all areas of the school campus?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

12. Are mock drills inclusive of students with special needs?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

13. Are mock drills conducted at least twice a year?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

14. Are hazardous electrical wires and cables properly secured?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

15. Is construction debris, weeds, and waste managed to prevent animals/reptiles from entering the school?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

16. Is traffic controlled during school opening and closing hours to prevent accidents?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

17. Are school buses and student transport vehicles properly maintained and monitored?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

18. Are drivers trained on speed limits and handling crisis situations?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

19. Are smoke detectors installed and functioning?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

20. Do kitchens (where lunch is prepared) have fire prevention equipment?

☐ Not Present ☐ Present – Good Condition ☐ Present – Bad Condition

PART IV: EARLY WARNING INFORMATION

1. Does the school receive official early warning messages related to hazards (cyclone, tsunami, storm surge, flooding)?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

2. Does the school receive early warnings from more than one source (e.g., SMS, official apps, TV, radio, or disaster authorities)?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

2a. How does the school receive information, and through which platform?

Response: _____

(This follow-up appeared with the Always/Sometimes/Rarely/Never scale in the source file, but the question itself asks "how" and "which platform," which reads as open-ended. It has been reformatted here as a fill-in item — please confirm which format was actually used with respondents.)

3. Is a specific teacher or staff member assigned to monitor hazard warnings?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

4. Are early warning messages received even during holidays or after school hours?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

5. Are early warnings immediately communicated to all teachers when they are received?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

6. Are early warnings communicated to students through the school's internal system (PA system, bell, announcements, etc.)?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

7. Is there a backup method to communicate warnings if the main system fails?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

7a. *What are the backup methods?*

Response: _____

(Same note as above — this follow-up also appeared with the frequency scale in the source file but reads as open-ended; reformatted as a fill-in item pending your confirmation.)

8. Are parents or guardians informed when a hazard warning affects school functioning?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

9. Do teachers know what actions are required for each type of hazard warning?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

10. Has the school provided any training or orientation on interpreting hazard warnings?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

11. Does the school activate its emergency or evacuation plan after receiving a hazard warning?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

12. Are early warning messages communicated in ways accessible to students with hearing or visual impairments?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

13. Has the school made improvements in its warning and response system based on past experiences?

☐ Always ☐ Sometimes ☐ Rarely ☐ Never

PART V: PHYSICAL SAFETY CONDITION OF NON-STRUCTURAL ELEMENTS

For each item below, please tick (✓) the box that best describes its condition in the school.

A. Architectural

Item	Not Present	Present – All Safe	Present – Some Unsafe	Present – Fully Unsafe
Stone wall cladding	☐	☐	☐	☐
Spalling of cracked cement plaster	☐	☐	☐	☐
Sun shade	☐	☐	☐	☐

B. Safety Equipment

Item	Not Present	Present – All Safe	Present – Some Unsafe	Present – Fully Unsafe
Stretcher	☐	☐	☐	☐
Ladder	☐	☐	☐	☐
Thick rope	☐	☐	☐	☐
Torch	☐	☐	☐	☐
First-aid box	☐	☐	☐	☐
Temporary shelter / tent	☐	☐	☐	☐
Fire extinguisher	☐	☐	☐	☐
Emergency exit sign boards	☐	☐	☐	☐
Assembly point	☐	☐	☐	☐

C. Furniture and Equipment

Item	Not Present	Present – All Safe	Present – Some Unsafe	Present – Fully Unsafe
Bookshelves	☐	☐	☐	☐
Storage cabinet	☐	☐	☐	☐
Display cupboards / almirahs	☐	☐	☐	☐
Filing cabinets	☐	☐	☐	☐
Laboratory equipment	☐	☐	☐	☐

Computer equipment	☐	☐	☐	☐
Black / green boards	☐	☐	☐	☐
Ceiling fan	☐	☐	☐	☐
Additional storage cabinets	☐	☐	☐	☐
Speaker devices	☐	☐	☐	☐
Computer, printer, and photocopy machines	☐	☐	☐	☐
Moveable wooden partition	☐	☐	☐	☐

D. Ceiling and Overhead

Item	Not Present	Present – All Safe	Present – Some Unsafe	Present – Fully Unsafe
Light fixtures	☐	☐	☐	☐
Coolers	☐	☐	☐	☐
Water tank	☐	☐	☐	☐
Flower pots	☐	☐	☐	☐
Wall shelves	☐	☐	☐	☐
Picture frames	☐	☐	☐	☐
Wall-mounted cabinets	☐	☐	☐	☐
Wall-mounted gadgets	☐	☐	☐	☐
LCD TV / equipment	☐	☐	☐	☐
Air conditioner	☐	☐	☐	☐
Wall-mounted water purifier (Aqua Guard)	☐	☐	☐	☐