

**ASSESSMENT OF THE FUNCTIONING OF MULTI-PURPOSE
CYCLONE SHELTERS IN KERALA**

MSW DISASTER MANAGEMENT

2024 - 26

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Course Code: SWDM 547

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ABSTRACT

Kerala is one of the most disaster-prone states in India, experiencing frequent floods, cyclones, storm surges, heavy rainfall, and coastal hazards. Major disasters such as Cyclone Ockhi (2017), the Kerala floods (2018), and the Wayanad landslides (2024) caused significant loss of life, damage to property, and disruption of livelihoods. These events highlighted the importance of disaster preparedness, timely evacuation, and the availability of safe shelters for vulnerable communities. Multi-Purpose Cyclone Shelters (MPCS) have been established in coastal areas to provide temporary shelter during disasters while also serving community needs during non-disaster periods. Assessing the effectiveness of these shelters is important to understand their role in protecting lives and supporting disaster risk reduction. The present study, titled "Assessment of the Functioning of Multi-Purpose Cyclone Shelters (MPCS) in Kerala" examines the functioning of MPCS during both disaster and non-disaster periods. The study focuses on the level of community awareness about the shelters, the experiences of people who stayed in during disasters, and the extent to which the shelters meet the needs of the affected population.

The study was carried out in selected Multi-Purpose Cyclone Shelters located across the coastal districts of Kerala. At present, sixteen Multi-Purpose Cyclone Shelters have been established in nine coastal districts of the state. Data were collected from shelter inmates using a structured questionnaire. A quantitative research design was adopted to understand the experiences and opinions of respondents regarding the facilities, services, management, and overall effectiveness of the shelters. The shelter assessment was conducted to examine the physical infrastructure, accessibility, maintenance, safety features, and the condition of the facilities available in each shelter. The assessment identified the need for regular maintenance, improvement of accessibility for persons with disabilities, strengthening of basic facilities, and continued support from the Shelter Management Committee and local authorities.

The study concludes that Multi-Purpose Cyclone Shelters are an important component of disaster preparedness and community safety in Kerala. Their effectiveness depends not only on the quality of physical infrastructure but also on proper maintenance, efficient management, community participation, and regular utilisation during non-disaster periods.

Keywords: Multi-purpose cyclone shelters, Kerala, flood, effectiveness, safety, functions, maintenance

CHAPTER - 1

INTRODUCTION

1.1 INTRODUCTION

Multi-Purpose Cyclone Shelters (MPCS) have become a crucial structural disaster-risk-reduction measure for communities frequently exposed to cyclones, floods, tidal waves, storm surges, and other hydro-meteorological hazards. These shelters serve a dual purpose: during emergencies, MPCS function as safe evacuation spaces, while in non-disaster periods, they operate as community resources such as schools, Day Care centres, vocational training halls, women empowerment hubs, Panchayat/municipality meeting venues, and centres for social functions. This multi-utility nature ensures constant utilisation, routine maintenance, and stronger community ownership (Dash & Walia, 2020). With the frequency and intensity of cyclones continuing to rise due to climate change, the relevance of MPCS as both lifesaving and community-support infrastructure has become increasingly significant (NDMA, 2015; KSDMA, 2019).

Multi-Purpose Cyclone Shelters in India

The emergence of cyclone shelters in India was influenced by early developments in South Asia, particularly the adoption of coastal public cyclone shelters in Bangladesh during the 1960s (Dash & Walia, 2020). In India, the devastating Andhra Pradesh cyclone of 1977 served as a turning point, revealing the urgent need for dedicated and structurally resilient evacuation infrastructure along the coastline. As a result, the Multi-Purpose Cyclone Shelter programme received institutional recognition under the National Cyclone Risk Mitigation Project (NCRMP), implemented by the National Disaster Management Authority (NDMA) with support from the World Bank (NDMA, 2015).

Dash and Walia (2020) highlight that MPCS emerged with dual expectations: to act as life-saving evacuation shelters during disasters and as neighbourhood-level community centres during everyday life. However, ambiguity persists regarding whether the shelters are intended primarily for the most vulnerable sections of society or for the wider community. This ambiguity has influenced site selection, shelter capacity, funding mechanisms, and user perceptions. To promote sustainability, a multi-purpose usage model was incorporated to ensure that cyclone shelters remain active throughout the year rather than deteriorating due to non-use during long non-disaster periods.

Multi-Purpose Cyclone Shelter in Kerala

In Kerala, MPCs emerged as part of NCRMP (National Cyclone Risk Mitigation Project) Phase II, which identified MPCs as a key structural mitigation measure for the state's coastal districts (KSDMA, 2019). The initial proposal aimed to construct 27 MPCs across nine coastal districts. After environmental and social screening, land verification, and Panchayat-level decision-making, 14 shelters were sanctioned across seven districts (KSDMA, 2019).

The National Cyclone Risk Mitigation Project (NCRMP) Phase II was implemented in Kerala with financial support from the Ministry of Home Affairs, Government of India, the World Bank, and the Kerala State Disaster Management Authority (KSDMA). The project covers nine coastal districts of the state and aims to reduce the impact of cyclones and other coastal hazards through structural and non-structural measures. One of the major components of the project is the construction of Multi-Purpose Cyclone Shelters (MPCs) to provide safe temporary shelter during disasters. During non-disaster periods, these shelters are used for community meetings, awareness programmes, training, educational activities, and other public purposes. The project also includes strengthening early warning dissemination systems, capacity building, community awareness, and training programmes to improve disaster preparedness. In addition, it supports the functioning and maintenance of the shelters through local community participation and provides administrative support for effective implementation and long-term sustainability.

The shelters were designed with disaster-resilient features, including elevated plinths, sanitation facilities, disability-friendly ramps, kitchen space, and generator rooms, to support extended habitation during emergencies. In non-disaster periods, MPCs are designated to function as community halls, training centres, school classrooms, and venues for social and developmental programmes, enabling regular usage and ensuring community-led maintenance and ownership (KSDMA, 2019).

Most of the MPCs structures were found to be similar in design and function. The shelter assessment showed that some shelters were not being used, some were functioning regularly, while others were used only during disasters. Most of the Multi-Purpose Cyclone Shelters were

equipped with warning dissemination systems for communicating disaster alerts to the community.

Floods, tidal surges, the COVID-19 pandemic, and election duties were identified as the major reasons for the use of these shelters. During election periods, army personnel were also accommodated in the shelters. Communities living near coastal areas were highly vulnerable to flooding, which resulted in the loss of homes, livelihoods, and other essential resources.

Many of the shelters currently function as school offices, primary schools, and residential spaces during non-disaster periods. In situations where people require temporary accommodation, the shelters are provided to them on a rental basis according to their needs. The shelters are managed under the supervision of the Panchayat Secretary, who serves as the assistant administrator, while the Village Officer acts as the head authority.

The findings further revealed that the majority of shelters are mainly used during non-disaster periods. The objectives of the Sendai Framework for Disaster Risk Reduction emphasise disaster prevention, mitigation, preparedness, and effective response mechanisms. In many cases, vulnerable populations live far away from designated cyclone shelters; therefore, they initially seek refuge in nearby public buildings such as schools. After staying there for a few days, government officials assist in relocating them to designated cyclone shelters. Additionally, some shelters were designed with ground-floor spaces specifically allocated for the protection and accommodation of livestock during disasters.

The management of Multi-Purpose Cyclone Shelters is carried out by a local shelter management committee consisting of the Panchayat Secretary or Panchayat President, the School Principal, the Village Officer, and representatives from the local community where the shelter is located. The committee is responsible for overseeing the overall functioning, maintenance of the shelter. Meetings are conducted to discuss maintenance work and arrangements required during emergency situations. The committee records the minutes of these meetings and maintains official documents related to disaster preparedness and shelter management. During emergencies, the details of evacuees staying in the shelter are recorded in a register to ensure proper coordination and effective management. In addition, a separate

shelter register is maintained to document community programmes, awareness activities, meetings, maintenance works, and other events conducted throughout the year. These records help ensure transparency, accountability, and the continuous readiness of the shelter to respond effectively during disasters.

Over the past 10 years, the Government of Kerala has established 16 Multi-Purpose Cyclone Shelters (MPCS) across nine coastal districts to strengthen and reduce the impact of cyclones and other coastal hazards. The first Multi-Purpose Cyclone Shelter was established in Vadakara, Kozhikode, in 2016. These shelters are designed as three-storey buildings that serve multiple purposes, functioning as safe evacuation centres during disasters while also supporting various community activities during non-disaster periods.

By evaluating the infrastructure, management systems, maintenance practices, and community experiences, the study provides valuable evidence on the strengths and limitations of the existing shelters. The findings will support policymakers, disaster management authorities, local self-governments, and other stakeholders in improving the planning, operation, and long-term sustainability of Multi-Purpose Cyclone Shelters, thereby enhancing community safety and disaster resilience in Kerala.

1.2 BACKGROUND OF THE STUDY

Kerala is one of the most disaster-prone states in India, frequently affected by floods, cyclones, heavy rainfall, storm surges, and coastal erosion. Disasters such as Cyclone Ockhi (2017), the Kerala floods (2018), and the Wayanad landslides (2024) caused extensive damage to lives, livelihoods, and infrastructure. These events highlighted the importance of disaster preparedness, timely evacuation, and the availability of safe shelters for people living in vulnerable coastal areas.

To improve disaster response and protect communities, Multi-Purpose Cyclone Shelters (MPCS) have been established in selected coastal districts of Kerala. During disasters, these shelters provide temporary accommodation and essential facilities such as drinking water, sanitation, food, electricity, medical support, and safe space for evacuees. During non-disaster

periods, many of these shelters are used for community meetings, awareness programmes, training programmes, health camps, and other public activities, ensuring that they remain active community assets.

The effectiveness of a shelter depends not only on its physical structure but also on its maintenance, management, accessibility, and the quality of services provided. The availability of basic facilities, proper support for women and persons with disabilities, regular maintenance, and the functioning of the Shelter Management Committee are important in ensuring that the shelters remain safe and ready for future emergencies.

Against this background, the present study assesses the effectiveness of Multi-Purpose Cyclone Shelters in Kerala by examining their infrastructure, facilities, management, and community use during both disaster and non-disaster periods. The study also considers the experiences of people who stayed in these shelters, providing a better understanding of their role in protecting communities and supporting disaster preparedness.

1.3 STATEMENT OF THE PROBLEM

The frequency and intensity of cyclones have increased in many parts of the world, including India, largely due to changing climate conditions. As coastal communities continue to face recurring cyclone threats, the need for effective disaster preparedness measures has become increasingly important. One such measure is the establishment of Multipurpose Cyclone Shelters (MPCS), which provide safe spaces for evacuation and temporary accommodation during emergencies.

The world's first cyclone shelter was established in Bangladesh during the 1960s. These shelters were developed in response to the frequent and devastating cyclones that affected the country's coastal regions. Over time, the concept of Multipurpose Cyclone Shelters gained recognition as an effective approach to reducing disaster-related risks and protecting vulnerable populations.

In Kerala, MPCS have been established in 9 coastal districts that are vulnerable to cyclones, storm surges, and other coastal hazards. During disasters, these shelters serve as safe evacuation centers where affected people can access food, drinking water, accommodation, sanitation facilities, and other necessities. They provide a secure environment for families until conditions are safe enough for them to return home.

In Kerala, the first Multipurpose Cyclone Shelter was established in Kozhikode in 2016. At present, 16 MPCS have been constructed across nine coastal districts of the state. These shelters contribute to disaster preparedness efforts while also supporting the social and community needs of the local population.

1.4 SIGNIFICANCE OF THE STUDY

Multi-Purpose Cyclone Shelters (MPCS) have become an important component of disaster risk reduction in cyclone-prone coastal regions. These shelters are designed not only to provide temporary protection during emergencies but also to serve the community during normal periods through various social and developmental activities. The effectiveness of these shelters depends on their accessibility, maintenance, management, and the extent to which they meet the needs of the local population. Therefore, assessing their performance is essential for improving disaster preparedness and strengthening community resilience.

The present study is significant because it examines how Multi-Purpose Cyclone Shelters function during both disaster and non-disaster periods. It evaluates whether these shelters are effectively serving their intended purpose of protecting people during emergencies while also contributing to the everyday needs of the community. The study explores how the shelters are managed, maintained, and utilized, providing a comprehensive understanding of their overall effectiveness.

Another important contribution of this study is that it assesses the level of awareness among people living in vulnerable coastal communities regarding the availability and use of Multi-Purpose Cyclone Shelters. Community awareness plays a vital role in disaster preparedness, as

people are more likely to respond quickly and use available facilities when they are familiar with evacuation procedures and shelter services. By examining the awareness and experiences of local residents, the study identifies areas where community education and disaster preparedness programmes can be strengthened.

The study also focuses on understanding the experiences of people who have stayed in these shelters during disaster situations. Their opinions and experiences provide valuable information about the quality of facilities, availability of essential services, safety, comfort, and overall shelter management. Through the assessment of shelter inmates and community members, the research evaluates whether the shelters adequately meet the needs of the affected population and identifies practical challenges faced during evacuation and temporary sheltering.

Special attention is given to the protection and well-being of vulnerable groups, including women, children, older persons, pregnant women, and persons with disabilities. During disasters, these groups often require additional support, privacy, safety, healthcare, and other essential services. This study examines whether the existing shelter facilities are capable of addressing their specific needs and ensuring their dignity and protection during emergency situations.

Earlier studies by Dash and Walia have shown the importance of Multi-Purpose Cyclone Shelters in saving lives during cyclones. Their findings indicate that, before these shelters were established, many deaths occurred because people did not have access to safe evacuation centres. With the establishment of Multi-Purpose Cyclone Shelters and improved evacuation arrangements, the number of disaster-related deaths decreased considerably. This highlights the important role of these shelters in protecting communities, particularly those living in vulnerable coastal areas, and demonstrates the need to continuously assess and improve their effectiveness (Dash & Walia, 2020).

Furthermore, the study identifies the strengths, limitations, and gaps in the planning, maintenance, and functioning of Multi-Purpose Cyclone Shelters. Understanding these gaps is important for improving future shelter planning, infrastructure development, resource management, and emergency response mechanisms. The findings may assist government departments, disaster management authorities, local self-governments, and other stakeholders

in making informed decisions regarding the development and effective management of cyclone shelters.

The study also examines the role of Multi-Purpose Cyclone Shelters beyond disaster periods. Many shelters are used for community meetings, educational programmes, health camps, awareness activities, and other public purposes. Assessing these functions helps determine how effectively the shelters contribute to community development while remaining prepared for emergency use. This information can support better utilization of existing infrastructure and encourage greater community participation in disaster preparedness activities.

Finally, this research contributes to the existing knowledge on community-based disaster management by providing evidence on the effectiveness of Multi-Purpose Cyclone Shelters from the perspective of the local community. The recommendations of the study will help improve the planning, design, maintenance, accessibility, and management of future shelters. By identifying practical improvements, the study aims to ensure that Multi-Purpose Cyclone Shelters continue to provide safe, inclusive, and reliable protection during disasters while strengthening disaster resilience, reducing risks, and supporting the long-term recovery and well-being of vulnerable communities.

Chapterisation

This dissertation is presented in six chapters:

- **Chapter - 1:** Introduction, Background of the study, Statement of the problem, Significance of the study
- **Chapter - 2:** Review of Literature
- **Chapter - 3:** Methodology of the study Includes Title of the Study, Research Objectives, Definition of Concepts, Pilot Study, Research Design, Sampling Strategy, Inclusion and Exclusion Criteria, Sources of Data, Data Collection, Tools for Data Collection, Data Analysis, Ethical Considerations, Assumptions, Limitations and Scope.
- **Chapter - 4:** Data Analysis and Interpretation

- **Chapter - 5:** Findings, Suggestions and Conclusions
- References and Annexures

CHAPTER - II
REVIEW OF LITERATURE

2.1 INTRODUCTION

Review of literature is an important part of any research study. It helps the researcher understand the work that has already been carried out on the selected topic and provides a clear background for the present study. Reviewing earlier studies, books, government reports, journal articles, policies, acts and other published sources helps in identifying important concepts, research methods, findings, and areas that require further study. It also enables the researcher to understand the strengths and limitations of previous studies and to relate the present research to the existing body of knowledge.

This chapter presents the review of literature related to Multi-Purpose Cyclone Shelters (MPCS) and their role in disaster management. It includes studies on disaster preparedness, disaster mitigation, evacuation, shelter management, maintenance, physical infrastructure, accessibility, and the availability of basic facilities, services in the shelters. The chapter also reviews studies related to the use of MPCS during disaster and non-disaster periods, the needs of vulnerable groups such as women and persons with disabilities, community participation, and the role of the Shelter Management Committee in managing and maintaining the shelters.

As Cooper (1982) pointed out, "The literature review is the foundation upon which research is built." It serves multiple critical functions.

The review of literature provides the background for the present study and helps in understanding the existing knowledge on Multi-Purpose Cyclone Shelters. It also highlights the need to assess the effectiveness of MPCS in Kerala by examining shelter management, infrastructure, services, maintenance, and the experiences of people who have stayed in the shelters. The literature reviewed in this chapter is presented under different themes and sub-themes based on the objectives of the study:

2.2 Climate Change:

Climate change has increased the intensity and frequency of cyclones, making coastal communities more dependent on Multi-Purpose Cyclone Shelters (MPCS) for safe evacuation and protection during disasters. (Ankit, 2022) The growing occurrence of cyclones and coastal flooding has highlighted the need for reliable, accessible, and community-oriented shelter

systems. MPCS not only protect during emergencies but also contributes to preparedness and resilience among vulnerable coastal populations.

Studies have shown that many people living in coastal regions do not immediately evacuate to cyclone shelters during emergencies. This hesitation is often linked to limited trust in the shelter system, previous disaster experiences, and inadequate communication regarding evacuation procedures. Some individuals believe that the disaster may not become severe, while others prefer to remain in their homes because of uncertainty and fear. In many cases, people receive insufficient information about evacuation timing and shelter arrangements, which delays their response during emergencies. Research further indicates that when shelters remain unused during normal periods, and communication is restricted only to disaster warnings, communities may perceive the shelters as unsafe, reducing their willingness to evacuate during crises. (Muhammad Zakaria, 2025)

Several studies have examined the impact of climate change on coastal and disaster-prone communities. Frequent cyclones, tidal flooding, and heavy rainfall have increased the vulnerability of households, especially among economically weaker populations living in both pucca and kutchha houses. Research conducted in Bangladesh and other coastal areas reported severe damage to houses, household assets, electronic appliances, livelihoods, and essential resources due to recurring floods and storms. (Tanzim Hayat, 2020)These studies emphasised that climate-related disasters have increased the demand for effective cyclone shelters and disaster preparedness mechanisms.

Previous research also focused on the accessibility and location of cyclone shelters within vulnerable communities. Spatial assessment methods and geo-mapping technologies were widely used to identify suitable public buildings, particularly schools, for emergency shelter purposes. Studies further highlighted the importance of early warning systems, evacuation planning, and disaster mitigation strategies in reducing the risks associated with climate-induced disasters. The findings stressed the urgent need for resilient shelter infrastructure to address the increasing challenges posed by climate change.

2.3 Shelters in non-disaster periods:

Multi-purpose cyclone shelters are not only important during emergencies but also function as valuable community resources during non-disaster periods. Many shelters are used as schools, community halls, training centres, and spaces for health-related activities. Such regular use increases public familiarity with the shelters and strengthens trust among community members. (Muhammad Zakaria, 2025) Continuous community engagement helps people view the shelters as a normal part of daily life rather than spaces meant only for disasters.

Existing literature has shown that cyclone shelters often serve multiple purposes when disasters are absent. Public buildings such as schools and community centres are frequently used for educational, residential, and administrative activities. Some studies observed that displaced families temporarily stayed in schools before being relocated to designated cyclone shelters by government authorities.

Research also indicated that shelters are sometimes provided to community members during social and environmental crises, including temporary accommodation needs. In several regions, shelters were additionally utilised during the COVID-19 pandemic and for election-related duties, where officials and security personnel were accommodated. Studies concluded that the multifunctional use of shelters enhances their social importance within communities and contributes to stronger local disaster preparedness systems.

2.4 Gender barriers and challenges faced by people with disabilities:

Research has highlighted that women in coastal communities often face increased vulnerability during disaster evacuation due to social restrictions, limited mobility, and inadequate facilities within shelters. Studies reported that many women experience difficulties accessing safe spaces during emergencies because decision-making processes are largely controlled by men. The absence of separate sanitation facilities, limited menstrual hygiene support, overcrowding, and lack of private family spaces further discourage women from using cyclone shelters. (Ankit, 2022)

Individuals with disabilities also experience significant physical and emotional challenges during evacuation and sheltering processes. Research found that shelter design strongly influences feelings of safety, comfort, and independence among persons with disabilities. Structural barriers such as narrow doorways, steep ramps, a lack of handrails, and limited movement space often create difficulties and increase anxiety during emergencies. These findings are highly relevant in the Kerala context, where many coastal households include elderly persons, children, and individuals requiring special care. Without proper support systems, these vulnerable groups may experience fear, isolation, and heightened risk during cyclone events. Studies further noted that unfamiliar shelter environments contribute to psychological stress, as many individuals struggle to balance personal safety with concerns about losing independence or becoming dependent on others. Research demonstrated that people who received support from family members, carers, community volunteers, or trained emergency staff felt more emotionally secure during sheltering. In contrast, individuals lacking such support often experienced isolation and insecurity, even while staying inside shelters. The findings suggested that safe sheltering for persons with disabilities depends on the interaction between accessible infrastructure, personal needs, and available social support systems. (Ruth Barker, 2022)

Previous studies also identified issues such as overcrowding, lack of privacy, and inadequate sanitation facilities as major concerns affecting the safety and dignity of women during evacuation. (Biswanath Dash, 2020) Women, older adults, and socially marginalised groups often receive less direct communication regarding evacuation procedures and may have limited participation in training sessions or awareness programmes related to shelter use. As a result, many individuals feel less informed and less confident during disaster situations. (Muhammad Zakaria, 2025)

Several studies have examined the inequalities experienced by vulnerable populations during disasters, particularly among women, older persons, and people with disabilities. Research findings revealed that persons with disabilities frequently faced difficulties accessing shelters because of inadequate infrastructure, inaccessible pathways, and limited awareness regarding evacuation procedures. Although persons with disabilities form a significant proportion of

populations living in disaster-prone regions, many continue to experience exclusion during emergencies.

Previous literature also reported psychological stress, fear, and social isolation among displaced populations residing in cyclone shelters. Some individuals experienced difficulties adjusting to temporary shelter conditions and coping with displacement. Studies further highlighted gender and religious disparities within shelters, where certain groups were accommodated separately. Women and children commonly faced privacy-related challenges, while persons with disabilities experienced barriers in accessing sanitation facilities and emergency support services.

Engineering and accessibility-related studies stressed the importance of inclusive shelter design. These studies evaluated structural components such as ramps, step height, lighting, toilet accessibility, and safe movement pathways to ensure shelters could accommodate both disabled and non-disabled individuals. The findings emphasised the need for inclusive disaster management practices that address the requirements of all vulnerable populations.

2.5 Governance:

Governance plays a major role in the effective functioning and management of cyclone shelters. Coordination among government departments, local self-government institutions, and community volunteers significantly influences the efficiency of shelter operations. Studies reported that many shelters lack clear responsibility regarding maintenance, emergency management, and budget allocation for repairs. In the absence of a strong governance framework, even well-constructed shelters may fail to function effectively during emergencies. (Biswanath Dash, 2020)

Research also highlighted the importance of transparent, inclusive, and consistent communication in building public trust in shelter management systems. When local disaster management authorities, community leaders, volunteers, and shelter committees worked together in communication activities, people showed greater confidence in evacuation

procedures and shelter systems. In contrast, inconsistent communication and messages from unfamiliar sources weakened public trust and created confusion during emergencies. Studies suggested that such fragmentation negatively affects sustainability, maintenance, funding, and community ownership of shelters. (Muhammad Zakaria, 2025)

During the COVID-19 pandemic, coordinated efforts among government departments, health officials, disaster management teams, and local communities contributed to more organised evacuation and shelter management processes. Research found that timely and clear communication improved evacuation efficiency, whereas delayed or confusing information reduced public trust and increased hesitation among affected populations. These findings demonstrated the importance of coordinated governance systems in managing shelters during complex emergencies. (Sujit, 2022)

Several studies further highlighted the responsibilities of Panchayat officials, village officers, local administrations, and community volunteers in disaster preparedness and response activities. Research showed that volunteers played a major role in evacuation support, food distribution, cleaning operations, and emergency assistance during disasters. The principles of the Sendai Framework for Disaster Risk Reduction were frequently referenced in disaster management studies, particularly in relation to prevention, mitigation, preparedness, and effective response mechanisms. Overall, the literature concluded that efficient governance systems are essential for improving shelter management and reducing disaster-related risks within vulnerable communities.

2.6 Sustainability:

Sustainability has become an important theme in research related to cyclone shelters and disaster resilience. Studies reported that low levels of public trust negatively affect community ownership, maintenance activities, and financial support for shelters, thereby reducing their long-term sustainability. (Muhammad Zakaria, 2025)

Research conducted during the COVID-19 pandemic revealed that many people were reluctant to move to multi-purpose cyclone shelters because of concerns regarding overcrowding, poor hygiene, inadequate sanitation, and the spread of infection. Although shelters were intended to provide safety during emergencies, many individuals believed that staying there could increase health risks. These experiences exposed the limitations of traditional shelter planning and highlighted the need for emergency shelters capable of managing multiple risks simultaneously rather than addressing disasters as isolated events. (Sujit, 2022)

Several studies emphasised the importance of durable, accessible, and multifunctional shelters that can support communities both during and after disasters. Research findings stressed the need for regular maintenance of water supply systems, sanitation facilities, electricity, and accessibility infrastructure to ensure the continued usability of shelters over time.

Studies also highlighted the importance of sustainable shelter planning that considers environmental conditions, future disaster risks, and community accessibility. The use of public buildings as emergency shelters was often viewed as a cost-effective and sustainable disaster management strategy. In addition, researchers identified the need for livestock accommodation spaces within shelters, as many disaster-affected families depend on animals for their livelihoods. Overall, the literature suggested that sustainable cyclone shelters should combine structural safety, environmental resilience, social inclusion, and community participation to strengthen long-term disaster preparedness and recovery. (Tanzim, et al., 2020)

2.7 Research Gap:

The multi-purpose cyclone shelters are an important part of disaster risk reduction in India; most studies have focused on states like Odisha and Bangladesh. But in Kerala, no systematic study has been conducted to assess how these shelters are perceived, accessed, or utilised by local communities.

CHAPTER – III
RESEARCH METHODOLOGY

3.1 INTRODUCTION

According to the Leedy and Ormrod (2019), the research methodology is an approach that the researcher to solve the problems through collected data's, data analysis, interpretation and its results.

This chapter outlines the study's title, research questions, theoretical framework, and conceptual definitions. It also covers details regarding the pilot study, research design, the research site, participant information, sampling strategies, and data collection methods. Additionally, it explains the procedures for data analysis and interpretation, addresses ethical considerations, and discusses the study's assumptions, limitations.

3.2 TITLE OF THE STUDY

ASSESSMENT OF THE FUNCTIONING OF MULTI-PURPOSE CYCLONE SHELTERS
IN KERALA

3.3 Research Objectives:

➤ 3.3.1 Main Objectives:

- To assess the effectiveness of Multi-Purpose Cyclone Shelters in disaster mitigation and preparedness in disaster and non-disaster periods.

➤ 3.3.2 Sub Objectives:

- To assess the availability and adequacy of basic facilities in Multi-Purpose Cyclone Shelters during disaster periods.
- To assess the extent to which MPCs meet the needs of vulnerable groups (differently abled & women).
- To assess the extent to which the community utilises MPCs during non-disaster periods.
- To evaluate the functioning of institutional mechanisms of MPCs.

3.4 Definitions:

3.4.1 Multi-Purpose Cyclone Shelters (MPCS)

Conceptual Definition:

MPCS are community-based infrastructures designed to provide safe shelter to vulnerable populations during cyclones and floods, while also serving multiple community functions such as schools, training centres, Anganwadi, and child-friendly spaces in non-disaster periods (Dash, 2020; KSDMA & UNICEF, 2025).

Operational definition:

The National Cyclone Risk Mitigation Project (NCRMP) Phase II is being implemented in Kerala with the support of the Ministry of Home Affairs, Government of India, the World Bank, and the Kerala State Disaster Management Authority (KSDMA). The project covers nine coastal districts and aims to reduce cyclone and coastal disaster risks. It includes the construction of Multi-Purpose Cyclone Shelters (MPCS), strengthening early warning dissemination systems, community awareness, capacity building, and training programmes. During disasters, the shelters provide safe temporary accommodation, while during non-disaster periods they are used for community activities. The project also promotes the maintenance and effective management of the shelters through community participation.

3.4.2 Preparedness

Conceptual Definition:

Preparedness refers to the knowledge, capacities, plans, and resources developed by governments, organizations, communities, and individuals to anticipate, respond to, and recover effectively from disasters (United Nations Office for Disaster Risk Reduction [UNDRR], 2017).

Operational Definition

Preparedness refers to the level of readiness of respondents to manage disasters, measured through indicators such as disaster awareness, knowledge of emergency procedures, participation in disaster training or mock drills, availability of emergency kits, family or institutional preparedness plans, early warning awareness, and confidence in responding to disasters.

3.4.3 Mitigation

Conceptual Definition

Mitigation is the lessening or minimization of the adverse impacts of hazardous events through structural and non-structural measures, including engineering interventions, policy development, environmental management, and public awareness (UNDRR, 2017).

Operational Definition

Mitigation refers to the preventive measures adopted by individuals, communities, and institutions to reduce disaster risks before hazards occur. It is measured through indicators such as hazard risk assessment, implementation of safety measures, resilient infrastructure, environmental conservation practices, land-use planning, community awareness programmes, and disaster risk reduction policies.

3.4.4 Effectiveness

Conceptual Definition

Effectiveness is the extent to which disaster management interventions achieve their intended objectives by reducing disaster impacts, protecting lives and property, and ensuring timely, coordinated, and efficient response and recovery. It reflects the successful attainment of planned outcomes in disaster risk management (UNDRR, 2017; Coppola, 2021).

Operational Definition

In this study, effectiveness refers to respondents' perceptions of how well disaster management initiatives meet their objectives. It is assessed through indicators such as timely emergency response, coordination among agencies, accessibility of relief services, adequacy of resources, beneficiary satisfaction, community participation, and successful recovery support.

3.5 Pilot Study:

A pilot study was conducted before the main data collection process. This helped the researcher understand the relevance of the topic and identify possible difficulties in the field. Discussions were held with officials and community members to improve the questionnaire and make necessary changes before conducting the final study. The pilot study carried out in Vadakara, Kozhikode and Kathiroom, Kannur.

3.6 Study Area:



Fig. No 3 .1: Areas studied

The study was carried out among local communities residing in areas where multi-purpose cyclone shelters are available and frequently used during disaster situations. The research mainly focused on vulnerable coastal regions of Kerala that are exposed to natural disasters such as cyclones, floods, and heavy rainfall. Special attention was given to vulnerable groups, including older persons, women, children, and persons with disabilities who use the shelters during emergencies. The study aimed to understand their experiences, level of awareness, and challenges related to the shelters.

The areas of study carried out by the districts such as Thiruvananthapuram, Kollam, Alappuzha, Ernakulam, Thrissur, Kozhikode, Kannur and Kasargod.

3.7 Research Design:

A cross-sectional research design was adopted for the study. Data were collected from the respondents at a single point in time to understand the existing conditions and experiences related to multi-purpose cyclone shelters. The study assessed factors such as awareness,

disaster preparedness, mitigation measures, effectiveness, and utilisation of the shelters among vulnerable communities. The design helped in understanding how the shelters are connected with the safety and preparedness of local communities in disaster situations.

3.8 Sampling Technique:

The study used a convenience sampling method for selecting the respondents. This method provided equal opportunity for individuals within the community to participate in the study and helped in reducing personal bias during the selection process.

3.9 Sources of Data:

Both primary and secondary sources of data were used for the study. Primary data were collected directly from the respondents through survey questionnaires and personal interaction. Secondary data were gathered from government reports, publications, previous research studies, and materials related to disaster management and multi-purpose cyclone shelters.

3.10 Method of Data Collection:

Data were collected through a direct survey method. The researcher personally visited the respondents and conducted face-to-face interactions to gather information. In some situations, telephonic conversations were also conducted to collect additional responses from the participants.

3.11 Tool for Data Collection:

A structured questionnaire was used as the main tool for data collection. The questionnaire included questions related to awareness, preparedness, mitigation measures, accessibility, maintenance, effectiveness, and utilisation of the shelters. Most of the questions were closed-ended and designed in a simple manner so that respondents could answer them easily.

3.12 Data Analysis:

After data collection, the responses were classified, coded, and entered into SPSS Statistics for analysis. Statistical techniques such as frequency, percentage, mean, and tabulation were used to interpret the findings. The analysis helped in presenting the data systematically and understandably.

3.13 Ethical Considerations:

Before collecting the data, the purpose of the study was clearly explained to the respondents. Their consent was obtained before conducting the survey. The participants were informed that the information collected would be used only for academic purposes and that their personal details would remain confidential. Privacy and confidentiality were maintained throughout the study.

3.14 Research Approach:

This study followed a quantitative research approach to examine the functioning and utilisation of multi-purpose cyclone shelters among vulnerable communities. The study primarily examined the level of awareness, preparedness, effectiveness, and use of shelters by people living in disaster-prone areas. Numerical data were collected from respondents through surveys and analysed statistically to identify relationships between the community and the selected variables. The quantitative approach helped in obtaining measurable and systematic information related to the study.

3.15 Sample Size:

A total of 80 respondents were selected for the study. The respondents were chosen from vulnerable communities living near multi-purpose cyclone shelters and included individuals who had knowledge or experience related to the use of the shelters.

3.16 Method of Data Collection:

Data were collected through a direct survey method. The researcher personally visited the respondents and conducted face-to-face interactions to gather information. In some situations, telephonic conversations were also conducted to collect additional responses from the participants.

3.17 Variables of the Study:

The variables considered in this study include community awareness, disaster preparedness, utilisation of Multi-Purpose Cyclone Shelters during disaster and non-disaster periods, availability of basic facilities, accessibility for vulnerable groups, shelter management, maintenance, and institutional functioning. The study also examines the effectiveness of the shelters in providing safety, essential services, and support to the affected communities. These variables were selected to assess the overall effectiveness and functioning of Multi-Purpose Cyclone Shelters in Kerala.

3.18 Inclusion & Exclusion Criteria

Inclusion Criterion: Community members who have stayed in Multipurpose Cyclone Shelters during disasters.

Exclusion Criterion: Community members who have never stayed in Multipurpose Cyclone Shelters during disasters.

3.19 ASSUMPTIONS, LIMITATIONS AND SCOPE

ASSUMPTIONS

- It has been assumed that MPCs have been in regular use since the time of setting up
- Disaster affected people have used the MPCs during times of disasters.
- The communities residing in the area have used the MPCs during non-disaster times
- The governance mechanisms for MPCs, such as the shelter management committees are in place.

- To understand the selected sample of 80 respondents from each study site is considered sufficient to understand the functioning of the Multi-Purpose Cyclone Shelters.
- Assuming that the respondents who stayed in the shelters during disaster events provided accurate and reliable information based on their personal experiences.
- To explore the members of the shelter management committees provided accurate information regarding the management, maintenance, and operation of the shelters during disaster situations.
- The field observations and shelter assessment reflected the actual condition, maintenance, and preparedness of the shelters during both disaster and non-disaster periods.
- To reflect on the local community members possessed adequate awareness of the Multi-Purpose Cyclone Shelters and were able to provide reliable information about their usefulness, accessibility, and the support available during emergencies.

LIMITATIONS

- Due to time constraints, the study was limited to 10 Multi-Purpose Cyclone Shelters out of the 16 shelters established in Kerala.
- Identifying and contacting respondents was challenging, as the researcher relied on the Local Self Government Department (LSGD) ward-wise beneficiary lists available for each district.
- The long travel distances between the selected shelter locations limited the amount of time available for data collection at some sites.
- Transportation difficulties and public holidays affected the field visits and resulted in delays in data collection at certain shelters.
- During some field visits, the shelter supervisor was unavailable, making it difficult to obtain permission and access to the shelters for observation and data collection.

SCOPE OF THE STUDY

The study focuses on the functioning of Multi-Purpose Cyclone Shelters (MPCSs) in Kerala during both disaster and non-disaster periods. It examines how these shelters are utilised to provide safe accommodation and essential services during emergencies, as well as their use for community activities when disasters are absent. The study covers key aspects such as the

physical infrastructure, accessibility, governance, maintenance, availability of basic facilities, and overall utilisation of the shelters. It also explores the level of community awareness about the shelters, preparedness measures, and the role of shelter management committees in ensuring their effective operation. In addition, the study examines the availability of essential facilities, including water, electricity, sanitation, cooking facilities, and other resources required for shelter management. Field observations and responses from community members and shelter management representatives were used to understand the present condition and functioning of the shelters. The findings of the study provide insights into the effectiveness of Multi-Purpose Cyclone Shelters and may support future planning, maintenance, and disaster preparedness initiatives in Kerala.

CHAPTER - IV
DATA ANALYSIS & INTERPRETATION

4.1 CHAPTER INTRODUCTION

This chapter presents the analysis and interpretation of the data using the Statistical Package for the Social Sciences (SPSS). The data used for the analysis were collected from the inmates of Multi-Purpose Cyclone Shelters across the nine coastal districts of Kerala. The data were collected using a structured questionnaire. The questionnaire was designed to assess the basic facilities and infrastructure, availability of essential services, community participation, usage patterns, and the functional role of the Multi-Purpose Cyclone Shelters.

The shelter assessment is an important part of this study as it provides a comprehensive understanding of the condition and functioning of Multi-Purpose Cyclone Shelters. It examines the physical infrastructure, maintenance, accessibility, and the availability of basic facilities and essential services provided in the shelters. The assessment also focuses on how the shelters are managed by the Shelter Management Committee, local self-government institutions, and other responsible authorities during both disaster and non-disaster periods. Equal importance is given to the experiences of shelter inmates, including their views on safety, accessibility, cleanliness, comfort, and the support they received during their stay. The assessment examines whether the shelters are properly maintained, regularly used, and kept ready for future emergencies. By studying both the management of the shelters and the experiences of the inmates, the assessment provides a clear understanding of the effectiveness of Multi-Purpose Cyclone Shelters and identifies areas where improvements are needed to strengthen disaster preparedness and response.

4.2 ANALYSIS OF DEMOGRAPHIC DETAILS

Demographic data represent the characteristics of a specific group based on identified variables. In this study, demographic information was collected to understand the respondents' backgrounds. The variables considered include age, gender, educational qualification, employment status, duration of stay in the shelter, and the type of disaster experienced. These demographic characteristics provide a basis for analysing and interpreting the study findings.

4.2.1 Age - Wise Participation of Respondents

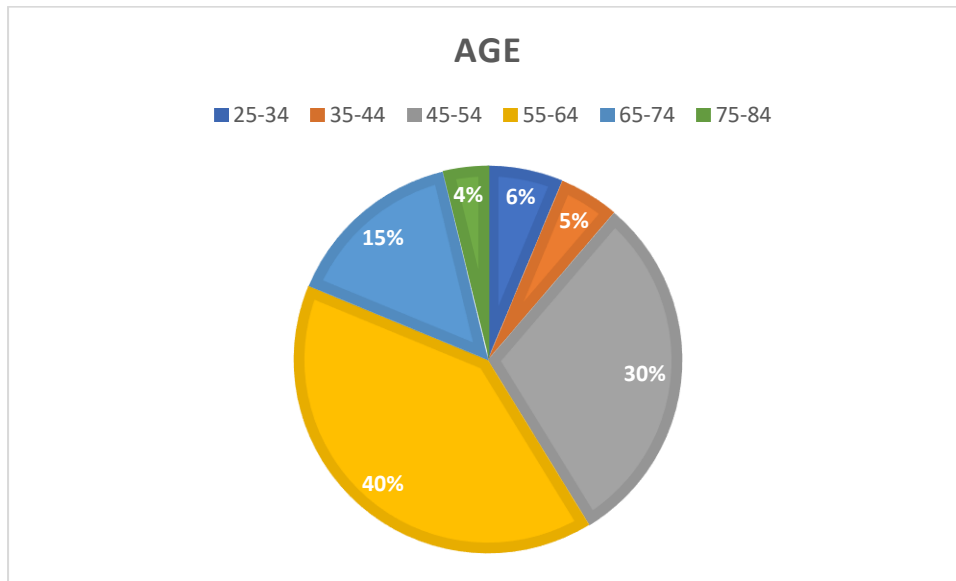


Fig. No 4.1: Age Composition

Table 4.1 presents the age distribution of the respondents at the time of survey. Among the 80 respondents, the largest proportion was in the 55 - 64 years age group, with 32 respondents (40.0%), followed by the 45 - 54 years age group with 24 respondents (30.0%). The 65 - 74 years age group included 12 respondents (15.0%), while 5 respondents (6.3%) were in the 25 - 34 years age group and 4 respondents (5.0%) belonged to the 35 - 44 years age group. The lowest representation was observed among the 75 - 84 years age group, with 3 respondents (3.8%). The findings indicate that a considerable proportion of the respondents were middle-aged and older adults, highlighting the importance of providing age-sensitive facilities and support systems in MPCs. The presence of elderly inmates emphasises the need for accessible infrastructure, healthcare support, and special care arrangements during disaster shelter management.

4.2.2 Gender Wise Participation of Respondents

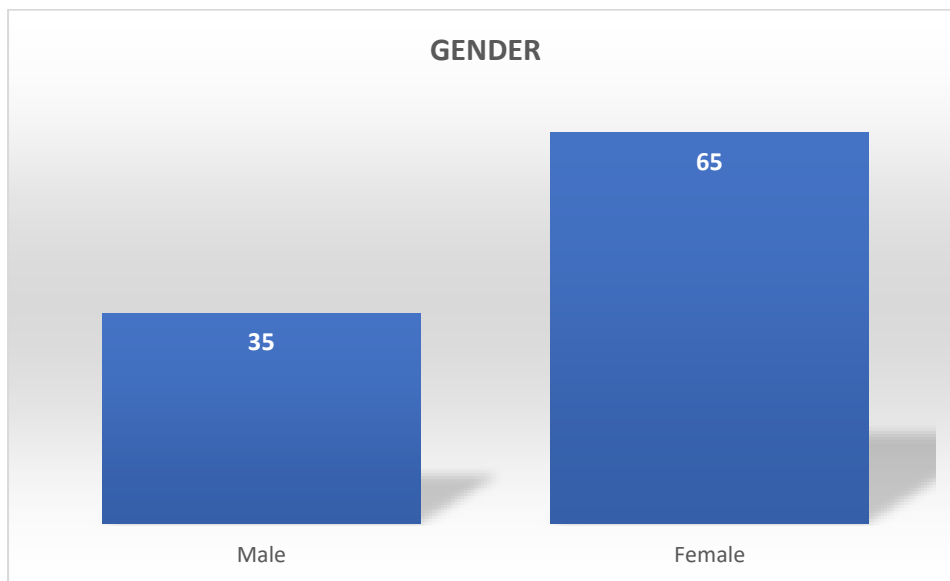


Fig. No 4 .2: Gender

Table 4.1 presents the gender distribution of the respondents. Among the total of 80 respondents, 52 (65.0%) were female, and 28 (35.0%) were male. The findings indicate that female respondents constituted the majority of the study sample. Thus, the data collected for the study predominantly reflect the perspectives of female respondents, while also incorporating the views of male respondents. The representation of both genders provides a basis for understanding community perceptions regarding the effectiveness of Multi-Purpose Cyclone Shelters.

4.2.3 Educational Qualification

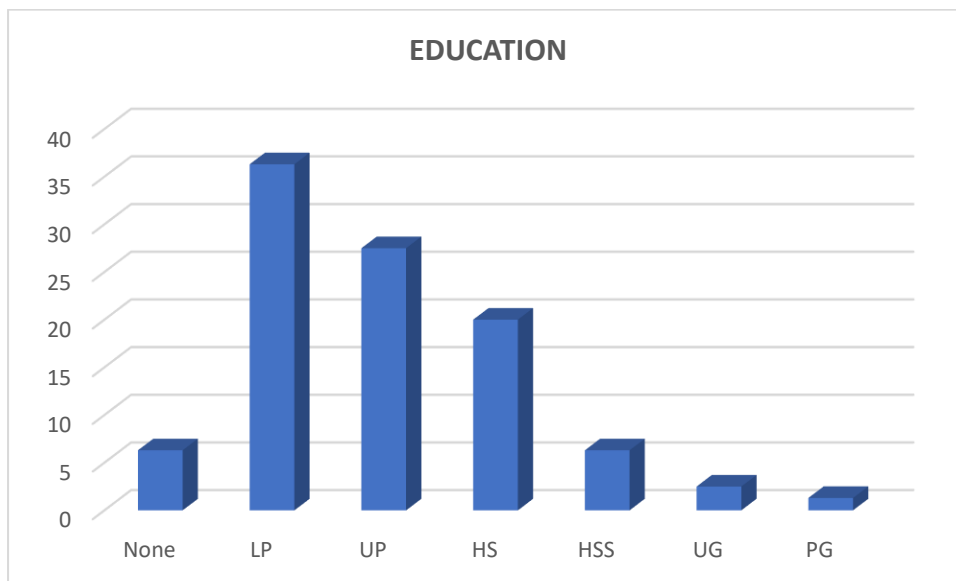


Fig. No 4.3: Education

Table 4.2 presents the educational qualifications of the respondents. Among the 80 respondents, 29 (36.3%) had completed Lower Primary (LP) education, representing the largest proportion of the sample. This was followed by 22 (27.5%) respondents with Upper Primary (UP) education and 16 (20.0%) with High School (HS) education. A very significant 83.8% of the respondents therefore had studied only up to the high school level. Five (6.3%) respondents had no formal education, while an equal number had completed Higher Secondary School (HSS). Only 2 (2.5%) respondents were graduates, and 1 (1.3%) respondent had completed postgraduate education.

The findings indicate that the majority of the respondents had attained only primary or secondary levels of education, with very few having completed higher education. This suggests that a considerable proportion of the study population may be socially and educationally vulnerable, which can influence their access to disaster-related information, preparedness measures, and available support services. Understanding this educational profile is important when assessing the effectiveness of Multi-Purpose Cyclone Shelters, as awareness, communication, and preparedness activities need to be appropriate for the educational background of the local community.

4.2.4 Occupation

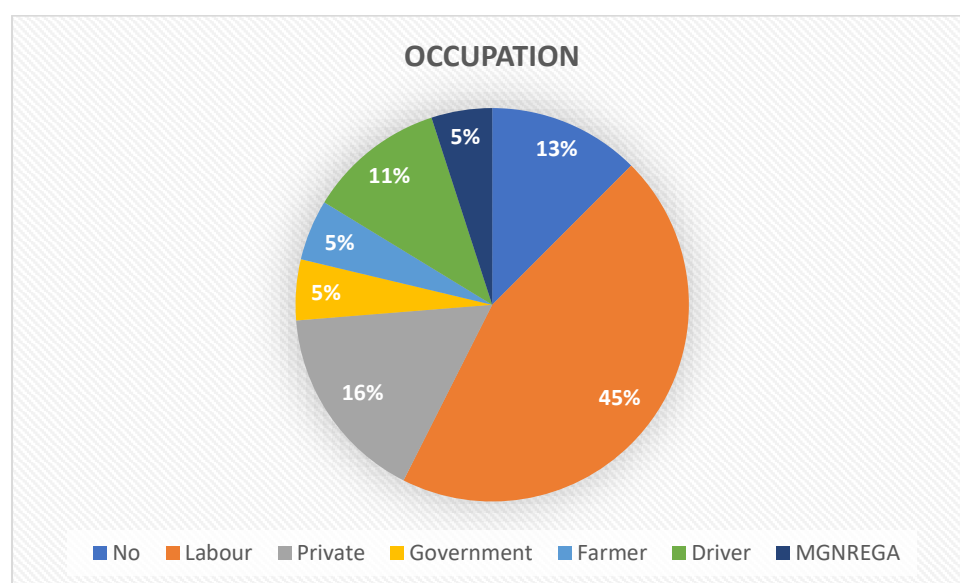


Fig. No 4 .4: Employment

Table 4.3 The occupational profile of the respondents shows the different types of livelihoods among the 80 respondents surveyed. The largest group consisted of individuals engaged in daily wage work, with 36 respondents (45.0%) involved in occupations such as labour work and other temporary employment. This was followed by 13 respondents (16.3%) working in private sector jobs and 9 respondents (11.3%) who were engaged in driving-related occupations.

A total of 10 respondents (12.5%) reported that they had no occupation, indicating that a section of the respondents was dependent on others or did not have a regular source of income. Government employees, cattle farmers, and MGNREGA workers accounted for 4 respondents each (5.0%).

The findings indicate that a major share of the respondents belonged to informal and less secure employment sectors, particularly daily wage labour and temporary occupations. These types of livelihoods are often highly affected during disasters, as cyclones, floods, and other hazards can interrupt work opportunities and reduce income sources. In contrast, respondents with more stable employment, such as government or private sector jobs, may have better financial security and additional support networks during emergencies.

The presence of a higher number of economically vulnerable groups among shelter users highlights the importance of Multi-Purpose Cyclone Shelters in providing immediate safety and support during disasters. People with limited income options may have fewer alternatives for temporary relocation, while those with stronger social and economic resources may be able to stay with relatives, friends, or other safer locations. Therefore, effective shelter planning and management are essential to protect communities whose livelihoods are most vulnerable to disaster impacts.

4.2.5 Household size

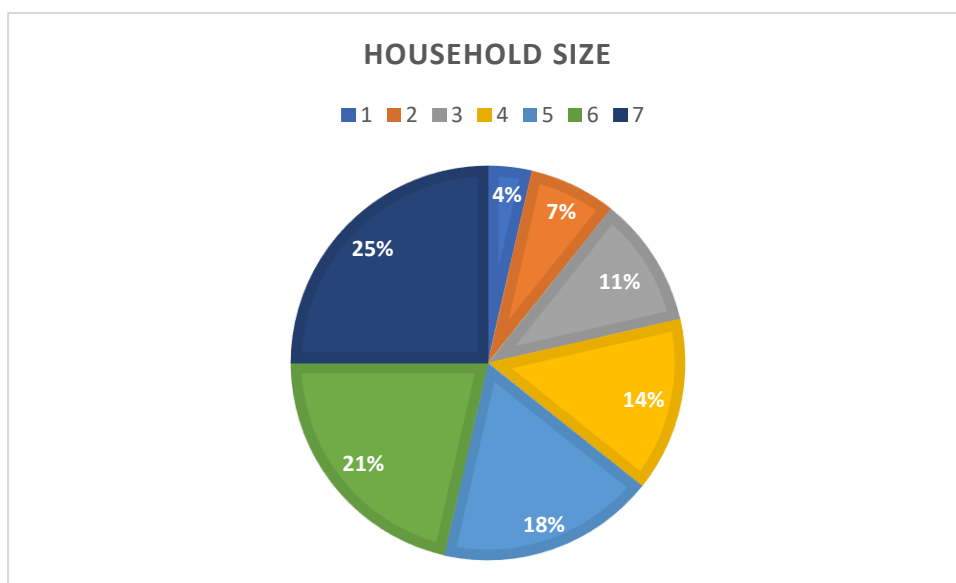


Fig. No 4 .5: Number of households

Table 4.4 presents the household size of the respondents. Among the 80 respondents, 27 (33.8%) had four family members, followed by 18 (22.5%) with three members and 13 (16.3%) with two members. Households with five members accounted for 12.5% of the respondents, while only a few reported one-member, six-member, or seven-member households. The findings indicate that most respondents belonged to medium-sized families comprising three to four members. This household composition is an important consideration in disaster management, as family size influences evacuation needs and the demand for essential facilities in Multi-Purpose Cyclone Shelters. The findings provide useful information for assessing the adequacy of shelter capacity and basic services during emergencies.

4.3. To assess the availability and adequacy of basic facilities in Multi-Purpose Cyclone Shelters during disaster periods.

To assess the overall effectiveness of Multi-Purpose Cyclone Shelters (MPCS) in disaster mitigation and preparedness during both disaster and non-disaster periods. It examines the level of awareness among community members about the availability and purpose of MPCS, as well as their preparedness to use the shelters during emergencies. It also focuses on how people receive evacuation information, reach the shelters during disasters, and use them as temporary safe shelters. The findings help to understand the role of MPCS in supporting timely evacuation and providing a safe place for affected communities during disasters.

4.3.1. Frequency of MPCS Stay

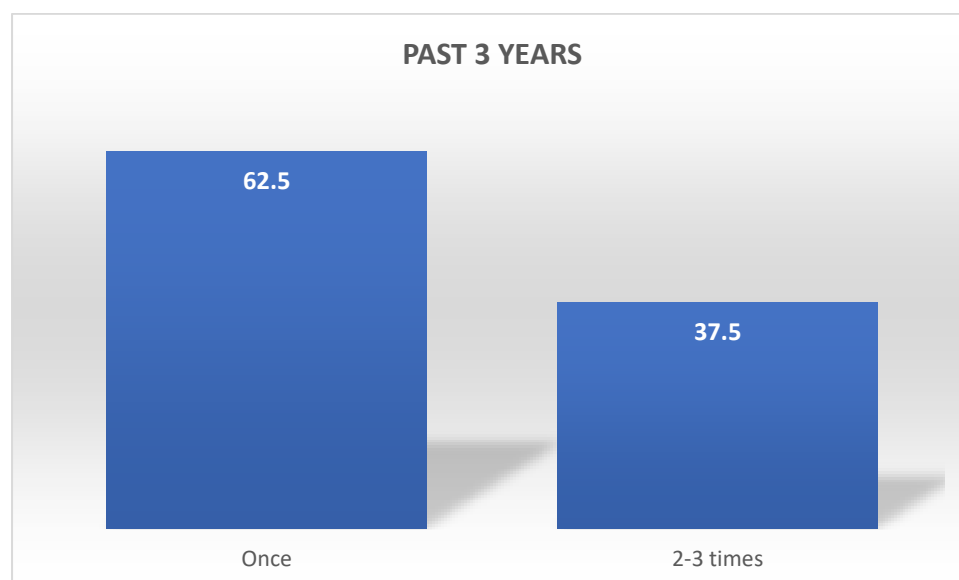


Fig. No 4 .6: MPCS stay frequency

Table 4.6 presents the number of times the respondents stayed in a Multi-Purpose Cyclone Shelter (MPCS) during the past three years. Among the 80 respondents, 50 (62.5%) reported staying in an MPCS once, while 30 (37.5%) had stayed two to three times. The findings indicate that the majority of the respondents had experienced shelter use at least once during the reference period. The proportion of respondents who stayed in the shelters two to three times suggests that some communities have been repeatedly affected by disaster events.

It is important to note that a significant 30% of the respondents had stayed in the shelter on two or more occasions. This indicates the higher incidence of disasters and the vulnerability of the people.

4.3.2 Length of Shelter Stay

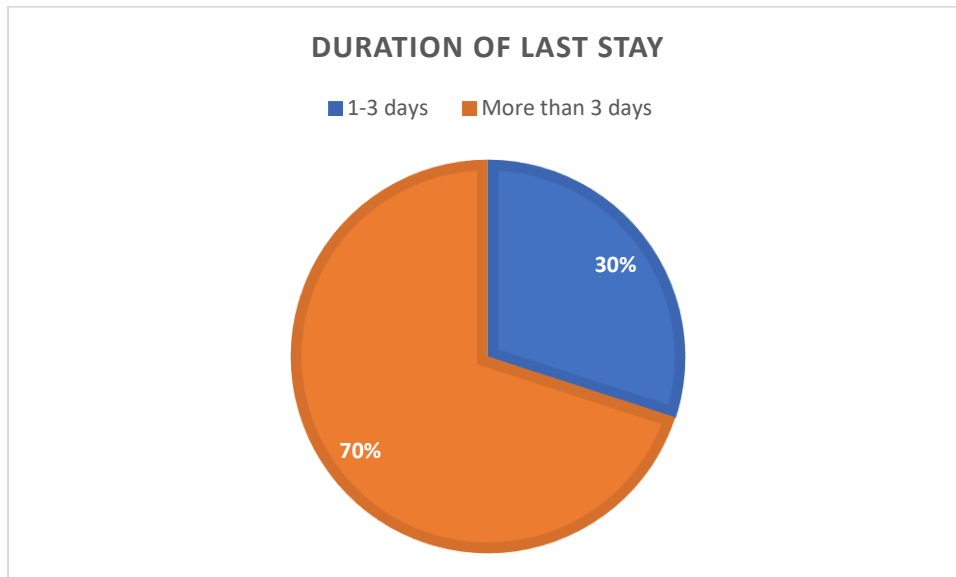


Fig. No 4 .7: Shelter stay duration

Table 4.7 presents the duration of stay of the respondents during their most recent stay in a Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 56 (70.0%) stayed in the shelter for more than three days, while 24 (30.0%) stayed for one to three days. The findings indicate that the majority of the respondents required shelter for an extended period during the disaster. This suggests that the shelters were used not only for immediate evacuation but also for prolonged accommodation until it was safe to return home. Some of the inmates were stayed for 3 days to 1 week. Many of the respondents returned to their homes once the situation became safe and their houses were safe to live in. therefore; the majority of the respondents stayed in the MPCS for more than 3 days to one month. The duration of stay highlights the importance of ensuring that Multi-Purpose Cyclone Shelters are adequately equipped with essential facilities and services to support occupants during extended emergencies.

4.3.3 Mode of Reaching MPCS

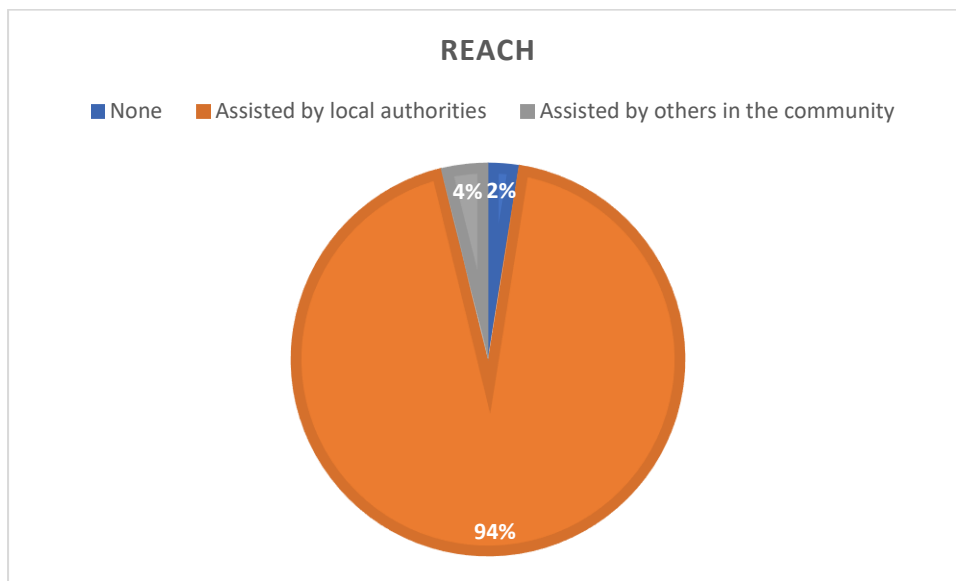


Fig. No 4 .8: Mode of shelter access

Table 4.8 presents the mode through which the respondents reached the Multi-Purpose Cyclone Shelter (MPCS) during the disaster. Among the 80 respondents, 75 (93.8%) reported that they were assisted by local authorities in reaching the shelter, while 3 (3.8%) were assisted by other members of the community. Only 2 (2.5%) respondents reported an alternative mode of reaching the shelter. They reached the shelter through whatsapp group messages from the community members.

The findings indicate that local authorities played a major role in facilitating the evacuation of affected communities to the MPCS. This reflects the importance of coordinated evacuation efforts and the active involvement of local authorities in ensuring the safety of vulnerable populations during disasters.

4.3.4 Source of Disaster Information

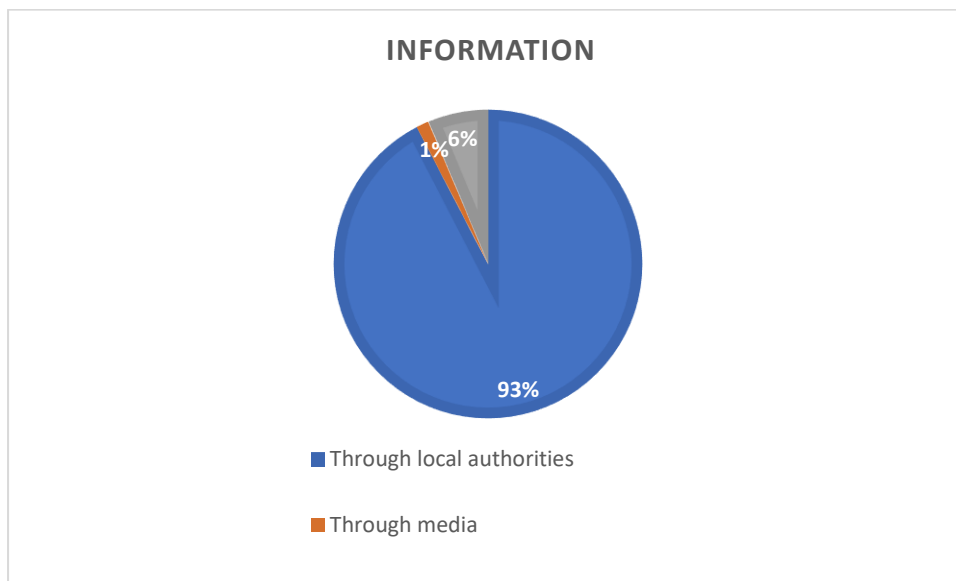


Fig. No 4 .9: Source of information

Table 4.9 presents the sources through which the respondents received information about evacuation or the disaster situation before reaching the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 74 (92.5%) received information through local authorities, representing the largest proportion. Five (6.3%) respondents reported receiving information through neighbours or community members, including community WhatsApp groups, while only 1 (1.3%) respondent received information through the media. The findings indicate that local authorities were the primary source of disaster warnings and evacuation information. This suggests that official communication systems played a key role in disseminating timely information, while community networks and social media platforms such as WhatsApp also supported information sharing among residents.

4.3.5 Effectiveness of MPCS in Disaster Protection

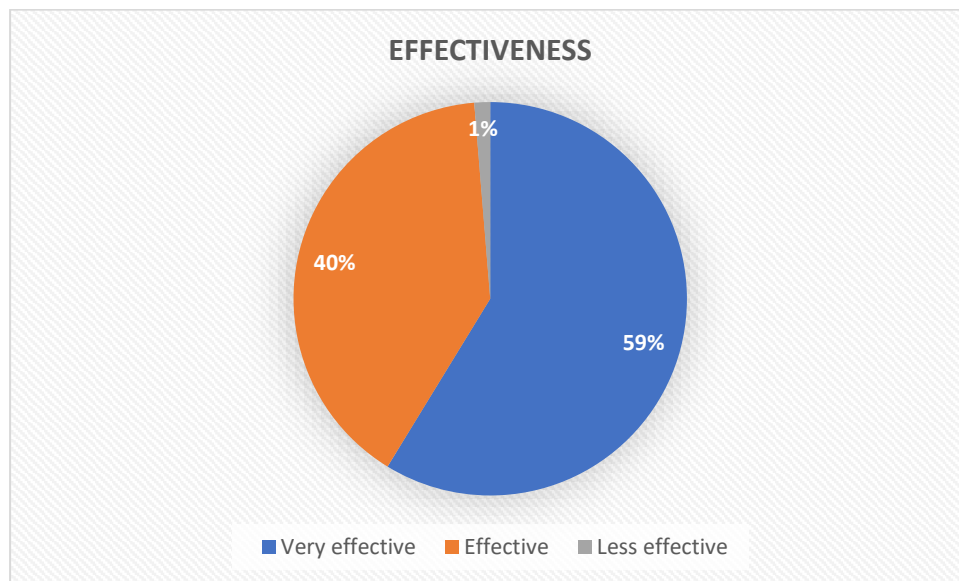


Fig. No 4 .10: MPCS effectiveness

Table 4.10 presents the respondents' opinions regarding the overall effectiveness of the Multi-Purpose Cyclone Shelter (MPCS) in protecting lives during disasters. Among the 80 respondents, 47 (58.8%) rated the shelters as very effective, 32 (40.0%) rated them as effective, and only 1 (1.3%) considered them less effective. The findings indicate that almost all respondents perceived the Multi-Purpose Cyclone Shelters as effective in safeguarding lives during disaster situations. This suggests that the shelters successfully provided a safe environment and essential services for disaster-affected communities. The high level of positive responses reflects the important role of the MPCS in reducing disaster risks, ensuring the safety of evacuees, and strengthening community resilience during emergencies.

4.3.6 Preference for Future Use of MPCS

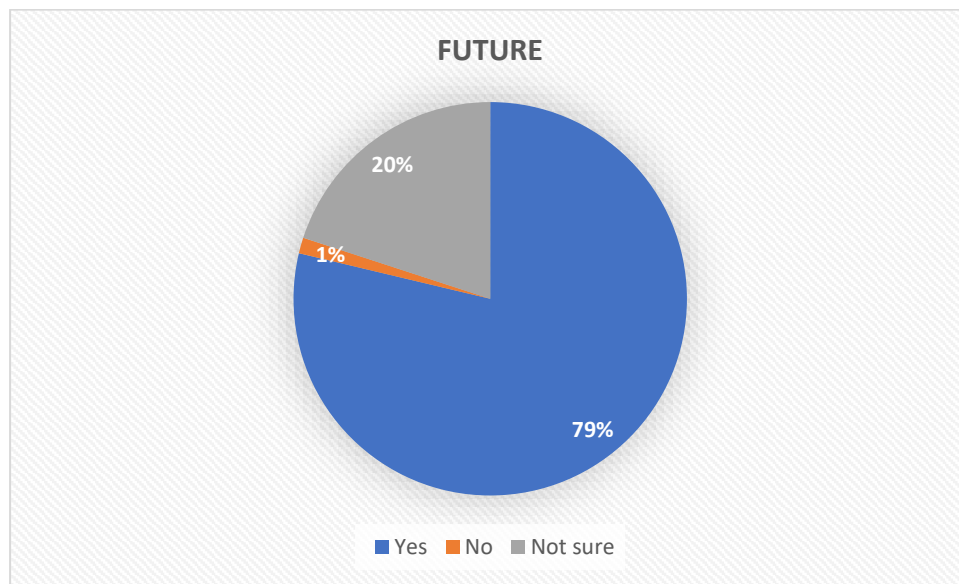


Fig. No 4 .11: Future shelter preference

Table 4.11 presents the respondents' preference for using the same Multi-Purpose Cyclone Shelter (MPCS) during future disaster situations. Among the 80 respondents, 63 (78.8%) expressed their willingness to use the same MPCS in future disasters, 16 (20.0%) were not sure, and only 1 (1.3%) respondent did not prefer to use the same shelter. The findings indicate that the majority of respondents had confidence in the effectiveness and suitability of the MPCS for future disaster situations. The positive response may be attributed to the safety, facilities, support services, and overall experience received during their previous stay. However, the uncertainty among some respondents highlights the need for continuous improvement and awareness regarding shelter facilities and services. Overall, the findings suggest that MPCS has gained community acceptance as a reliable disaster management facility.

4.3.7 Structural Safety of MPCS

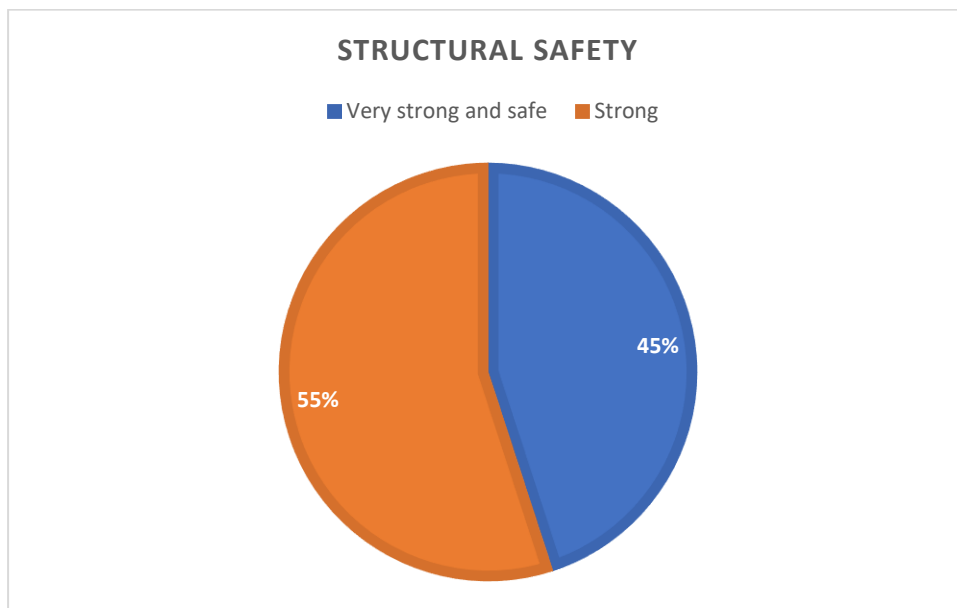


Fig. No 4 .12: Structural safety

Table 4.12 presents the respondents' opinions regarding the structural safety of the Multi-Purpose Cyclone Shelter (MPCS) during disaster periods, particularly its resistance to floods, cyclones, heavy rainfall, and strong winds. Among the 80 respondents, 44 (55.0%) rated the structural safety of the MPCS as strong, while 36 (45.0%) rated it as very strong and safe. The findings indicate that all respondents had a positive perception regarding the structural stability and safety of the shelters during disasters. This suggests that the MPCS were capable of providing a secure environment and protecting evacuees from various disaster-related hazards. The high level of confidence among respondents reflects the effectiveness of the shelter design and construction in enhancing community safety and disaster preparedness.

4.3.8 Overall Satisfaction with MPCS



Fig. No 4 .13:Overall satisfaction

Table 4.13 presents the respondents' level of satisfaction with the facilities and services provided by the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 43 (53.8%) reported that they were satisfied, while 37 (46.3%) reported that they were very satisfied with the facilities and services provided. The findings indicate that all respondents expressed a positive level of satisfaction towards the functioning of the MPCS. This suggests that the shelters were able to meet the basic needs and expectations of the evacuees during their stay. The high level of satisfaction reflects the effectiveness of the facilities, services, and overall management of Multi-Purpose Cyclone Shelters in supporting disaster-affected communities.

4.3.9 Type of Disaster Experienced

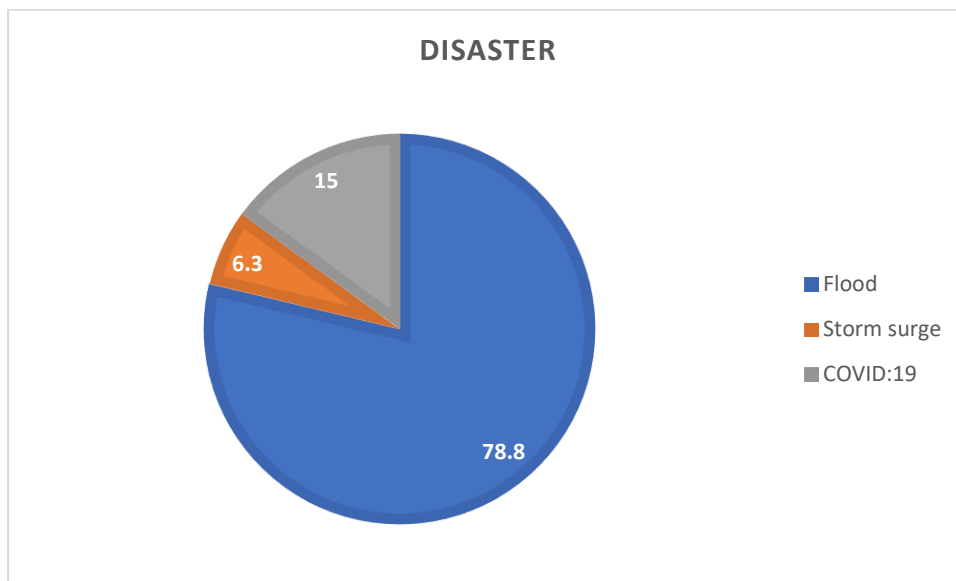


Fig. No 4 .14: Type of disaster

Table 4.14 presents the type of disaster during which the respondents stayed in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 63 (78.8%) reported staying in the shelter during floods, representing the largest proportion. This was followed by 12 (15.0%) respondents who used the shelter during the COVID-19 pandemic and 5 (6.3%) who stayed during a storm surge. The findings indicate that floods were the primary disaster event that led to the use of MPCS among the respondents. This suggests that the shelters play a significant role in providing safe accommodation during flood emergencies and are also utilised during other disaster situations, demonstrating their multipurpose nature.

It indicates that, floods were the most common disasters that occurred in the regions where the shelters have been set up in the state.

4.3.10 Safety and Security in Shelter

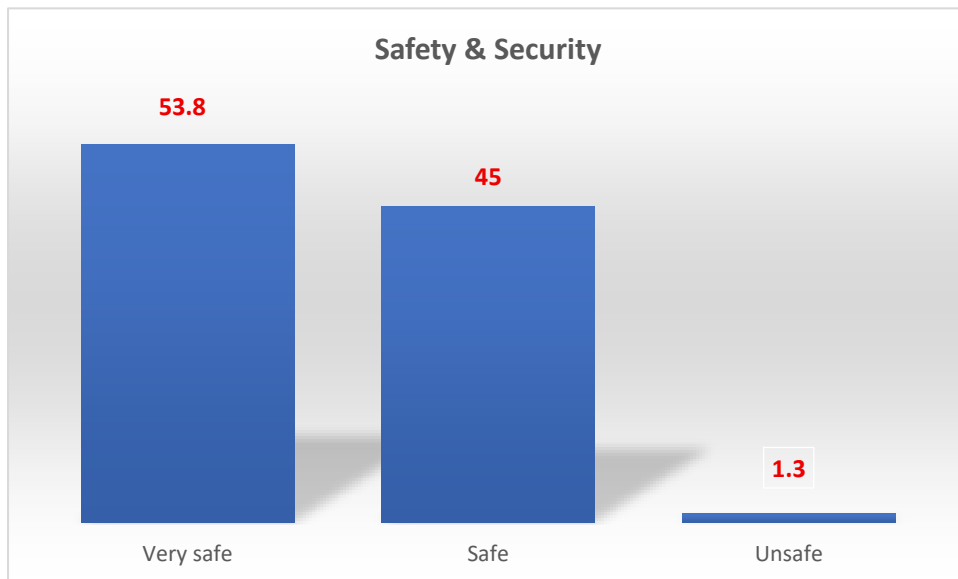


Fig. No 4 .15:Safety and security of the MPCS

Table 4.15 presents the respondents' opinions regarding the safety and security inside the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 43 (53.8%) rated the shelter as very safe, 36 (45.0%) rated it as safe, and only 1 (1.3%) considered it unsafe. The findings indicate that almost all respondents felt safe and secure during their stay in the shelter. This suggests that the Multi-Purpose Cyclone Shelters provided a secure environment for disaster-affected communities. The high level of perceived safety reflects effective shelter management, security measures, and the ability of the shelters to protect evacuees during emergencies.

4.3.11 Adequacy of Shelter Capacity

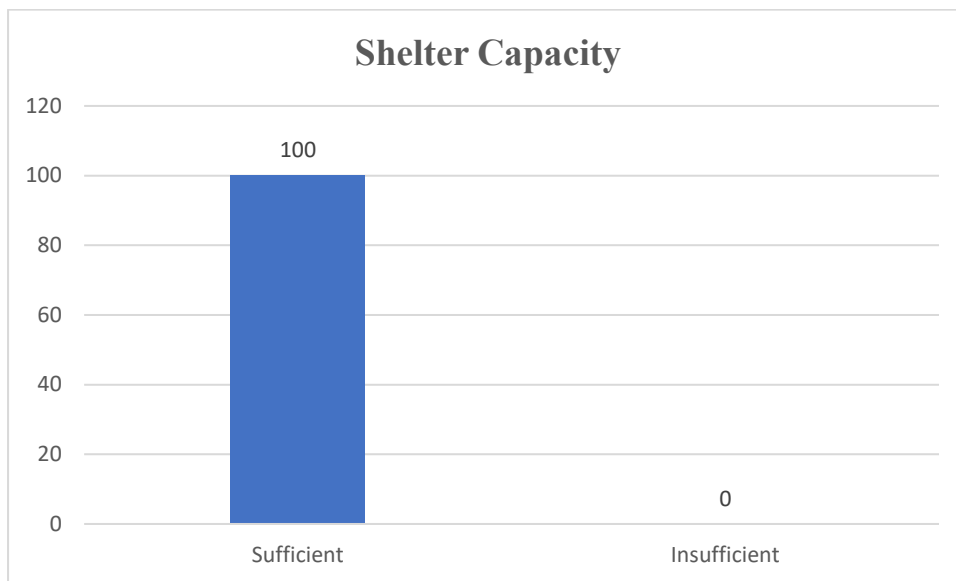


Fig. No 4.16: Shelter Capacity

All 80 respondents (100%) reported that the capacity of the Multi-Purpose Cyclone Shelter was sufficient to accommodate all evacuees during their stay. The findings indicate that the shelters had adequate space to accommodate affected families without overcrowding. During the field observation, it was found that the shelters had separate rooms for men and women, allowing occupants to stay comfortably while maintaining privacy. The shelters also had sufficient space to accommodate children, older persons, pregnant women, persons with disabilities, and other vulnerable groups during disaster situations. Overall, the respondents were satisfied with the shelter capacity, indicating that the available space was adequate to meet the needs of the evacuees and support safe shelter management during emergencies.

4.3.12 Adequacy of Shelter Capacity and Facilities

The Multi-Purpose Cyclone Shelters (MPCS) provide most of the essential basic facilities required for accommodating people during disaster situations. All 80 respondents (100%) reported that the shelters have sufficient rooms and sleeping areas, an adequate number of toilets, proper lighting, good ventilation, and enough space for movement without overcrowding. These responses indicate that the shelters are well planned and provide a safe, hygienic, and comfortable environment for evacuees. Adequate space, sanitation, lighting, and

ventilation contribute to the overall effectiveness of the shelters and help people stay comfortably during emergencies.

Regarding sleeping arrangements, 79 respondents (98.8%) stated that there were sufficient beds for everyone, while 1 respondent (1.3%) felt that the beds were not enough. Similarly, 98.8% of the respondents confirmed the availability of other essential facilities such as water, electricity, and sanitation, whereas 1.3% reported that these facilities were inadequate. These responses suggest that only a few minor gaps exist in the provision of essential services.

All the 80 respondents (100%) reported that separate spaces for families were not available. Although the shelters meet most basic needs, the lack of designated family spaces may affect privacy and comfort, especially for women, children, older persons, and families staying in the shelter. Overall, the shelters are well-equipped, with scope for improvement in providing family-friendly accommodation.

4.3.13 Challenges Related to Shelter Capacity

The findings indicate that the Multi-Purpose Cyclone Shelters were able to provide a safe and supportive environment for most evacuees during disaster situations. The majority of respondents did not encounter significant difficulties while staying in the shelters, suggesting that the available facilities and services were generally adequate.

Regarding accommodation, 90% of the respondents stated that the shelters were not overcrowded, while 10% reported that there were too many people during their stay. Although overcrowding was experienced in a few cases, it was not a common issue. In addition, all respondents (100%) confirmed that there was no shortage of beds, rooms, or sleeping areas, indicating that the shelters had sufficient capacity to accommodate evacuees comfortably.

The physical environment of the shelters was also viewed positively. Every respondent reported not experiencing poor ventilation or inadequate lighting. These findings suggest that the

shelters maintained proper air circulation and lighting, creating a safe and comfortable space for people staying there during emergencies.

Most respondents were also satisfied with the availability of essential services. 98.8% reported that toilet and sanitation facilities were adequate, while only 1.3% experienced inadequacies. Similarly, 98.8% stated that water and electricity were available throughout their stay, whereas 1.3% reported interruptions in these services.

Overall, the findings show that the surveyed Multi-Purpose Cyclone Shelters effectively met the basic needs of evacuees. The few concerns reported were limited to a small number of respondents, indicating that these were isolated issues rather than widespread problems across the shelters.

4.3.14 Availability of Drinking Water

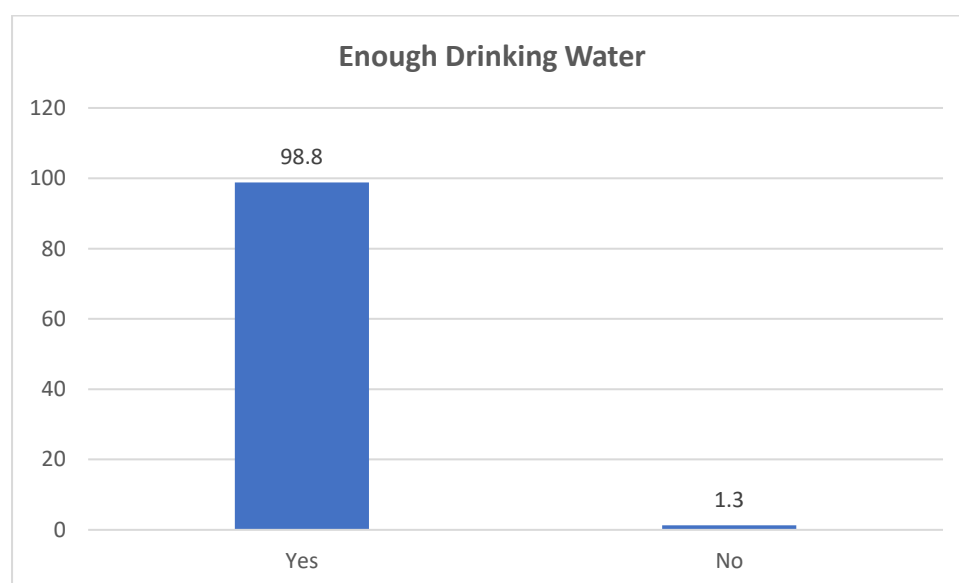


Fig. No 4 .17: Drinking water availability

Table 4.17 presents the respondents' opinions regarding the availability of drinking water during their stay in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 79 (98.8%) reported that they received sufficient drinking water, while only 1 (1.3%) stated that the drinking water was insufficient. The findings indicate that almost all respondents had access

to an adequate supply of safe drinking water during their stay in the shelter. This suggests that the MPCS effectively met one of the most essential needs of the evacuees during the disaster. The availability of sufficient drinking water reflects the shelter's capacity to support the health and well-being of its occupants during emergencies.

4.3.15 Availability of Water for Daily Needs

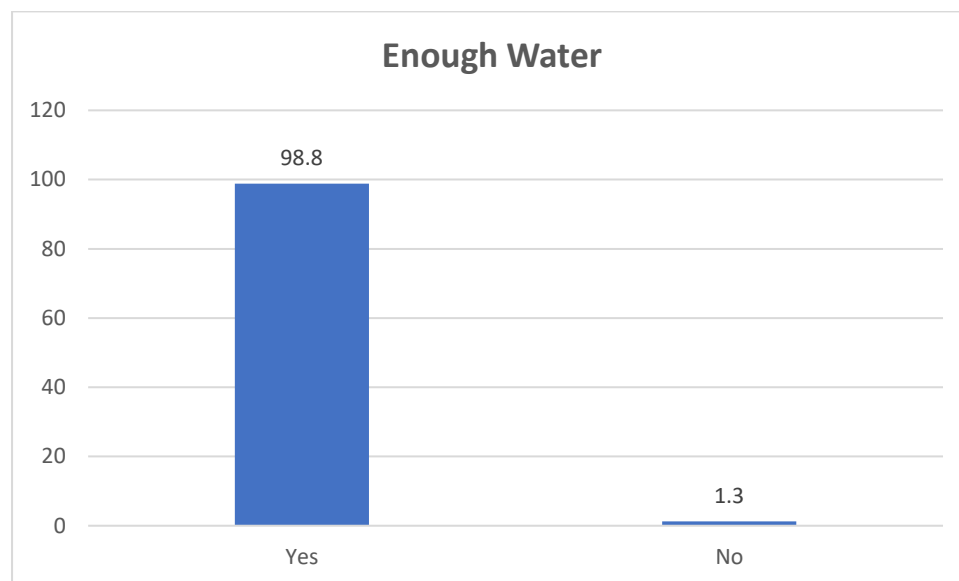


Fig. No 4 .18: Water for daily needs

Table 4.18 presents the respondents' opinions regarding the availability of sufficient water for cooking, washing, and bathing during their stay in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 79 (98.8%) reported that they received sufficient water for these purposes, while only 1 (1.3%) respondent reported otherwise. The findings indicate that the vast majority of the respondents were satisfied with the availability of water for daily domestic needs during their stay in the shelter. This suggests that the MPCS was effective in providing adequate water facilities to support the basic needs of evacuees during the disaster period.

4.3.16 Adequacy of Toilet Facilities

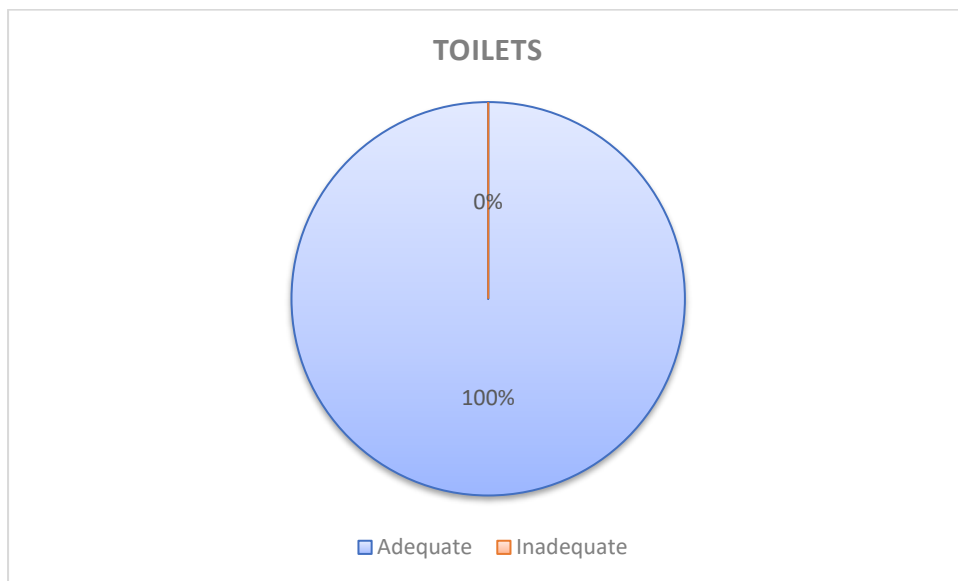


Fig. No 4 .19: Toilet availability

Table 4.19 presents the respondents' opinions regarding the availability of toilets in the Multi-Purpose Cyclone Shelter (MPCS). All 80 respondents (100%) reported that there were enough toilets for the inmates during their stay in the shelter. The findings indicate that the shelter provided adequate sanitation facilities to meet the needs of all occupants. This suggests that the MPCS was well equipped to maintain proper sanitation and hygiene during the disaster period. Adequate toilet facilities contribute to the comfort, health, and overall well-being of evacuees, reflecting the effectiveness of the shelter in providing essential basic services.

4.3.17 Running Water in Toilets

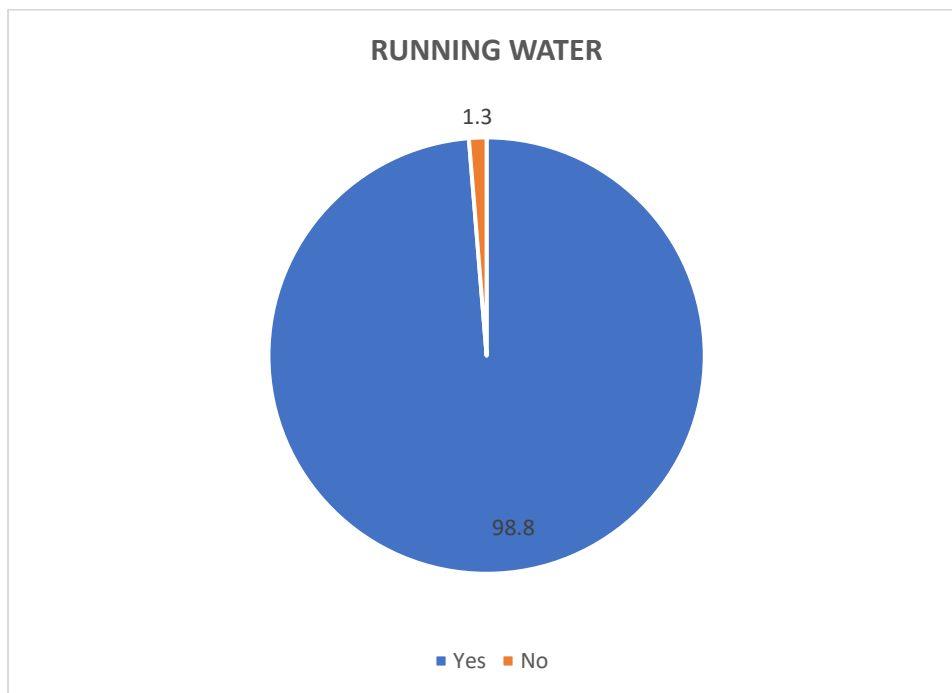


Fig. No 4 .20:Running water

Table 4.20 presents the respondents' opinions regarding the availability of running water inside the toilets of the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 79 (98.8%) reported that running water was available inside the toilets, while only 1 (1.3%) reported that it was not available. The findings indicate that almost all respondents had access to functional toilet facilities with a continuous water supply. This suggests that the shelter maintained adequate sanitation and hygiene standards during the disaster period. The availability of running water inside the toilets reflects the effectiveness of the MPCS in providing essential sanitation facilities for the comfort and well-being of evacuees.

4.3.18 Source of Water for Toilets

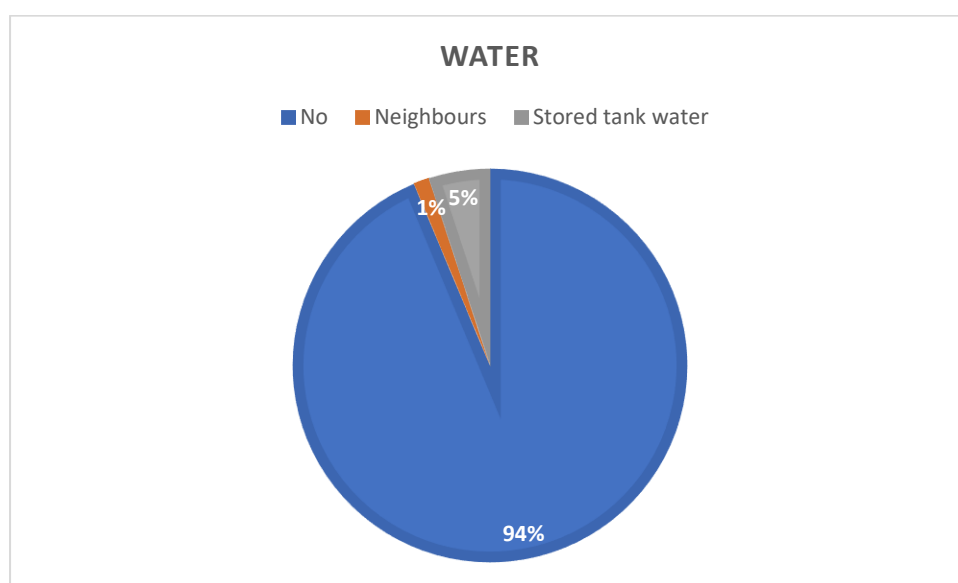


Fig. No 4 .21: Source of water

Table 4.21 presents the respondents' responses regarding the source of water used in the toilets when running water was unavailable. Among the 80 respondents, 75 (93.8%) indicated that the question did not apply to them, as they had access to running water in the toilets. Only 4 (5.0%) respondents reported using stored tank water, while 1 (1.3%) respondent obtained water from neighbouring sources. The findings indicate that only a very small proportion of respondents experienced the absence of running water in the toilets. This suggests that the Multi-Purpose Cyclone Shelters generally provided adequate water facilities for sanitation, with only a few respondents relying on alternative water sources.

4.3.19 Condition of Toilet Facilities in the Shelter

The findings indicate that the Multi-Purpose Cyclone Shelters provide adequate sanitation facilities and are easily accessible to the local community. All 80 respondents (100%) reported that the shelters have separate toilets for men and women, lockable doors for privacy, an adequate number of toilets, mugs and buckets for use, and are located in easily accessible areas. In addition, 100% of the respondents stated that the shelters have proper ventilation, creating a comfortable indoor environment during their stay. These findings suggest that the shelters have been planned to meet the basic sanitation, privacy, and accessibility needs of evacuees.

The majority of respondents were also satisfied with the maintenance and functioning of essential facilities. Seventy-nine respondents (98.8%) reported that the shelters are cleaned regularly, while only 1 respondent (1.3%) felt that cleanliness was not maintained consistently. Similarly, 98.8% confirmed that the sanitation facilities were functional, water supply and pipelines were adequate, and electricity and lighting were available throughout their stay. Only 1.3% of the respondents reported problems related to these services.

Overall, the findings show that the surveyed Multi-Purpose Cyclone Shelters provide a clean, safe, and accessible environment for disaster-affected communities. The availability of gender-segregated toilets, privacy measures, adequate sanitation facilities, reliable water and electricity, and easy access reflects the preparedness of the shelters to support evacuees during emergencies. The few concerns reported by a small number of respondents indicate the need for regular monitoring and maintenance to ensure that these facilities remain functional and accessible at all times.

4.3.20 Challenges in Toilet Facilities

The findings show that problems related to sanitation, accessibility, and basic facilities were reported only by a very small number of respondents. All 80 respondents (100%) stated that they did not experience the absence of separate toilets for men and women, non-lockable doors, poor ventilation, lack of mugs and buckets, an insufficient number of toilets, or an inaccessible shelter location. These responses indicate that the shelters were generally well planned and equipped to meet the basic needs of evacuees. The availability of gender-segregated toilets, secure doors, proper ventilation, adequate sanitation materials, sufficient toilet facilities, and easily accessible locations contributed to a safe and comfortable shelter environment.

A few respondents reported minor issues with the maintenance of certain services. Seventy-nine respondents (98.8%) stated that they did not experience poor cleanliness and hygiene, non-functional sanitation facilities, insufficient water supply or damaged pipelines, or the unavailability of electricity and lighting. However, 1 respondent (1.3%) reported experiencing each of these concerns. Although these responses represent only a small proportion of the

sample, they indicate that occasional interruptions or maintenance issues may occur in some shelters.

The findings suggest that the surveyed Multi-Purpose Cyclone Shelters provide satisfactory sanitation facilities, essential services, and good accessibility. Most respondents were satisfied with the condition and functioning of the shelters, while only isolated cases highlighted the need for regular inspection, maintenance, and timely repairs. Continuous monitoring of water supply, sanitation facilities, electrical systems, and cleanliness will help ensure that all shelters consistently provide a safe, hygienic, and comfortable environment for people during disaster situations.

4.3.21 Conflicts Among Shelter Inmates

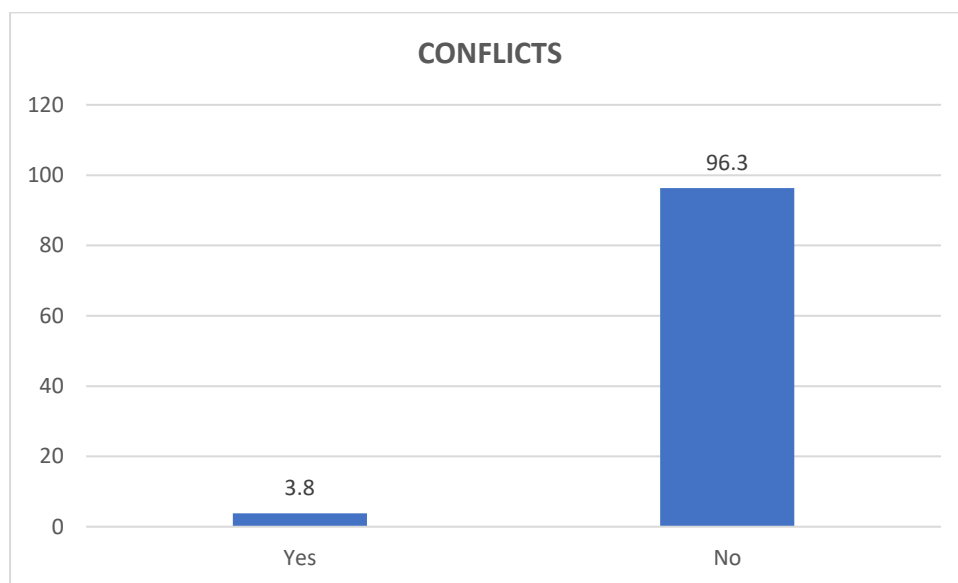


Fig. No 4 .22: Inmate conflicts

Table 4.22 presents the respondents' experiences of conflicts with other inmates during their stay in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 77 (96.3%) reported that they did not face any conflicts, while only 3 (3.8%) experienced conflicts during their stay. The findings indicate that the shelter environment was generally peaceful, with only a few respondents reporting interpersonal issues. Based on the responses collected during the survey, the reported conflicts were mainly related to the unequal distribution of relief materials, as some inmates attempted to take more resources, such as bedsheets and clothing, than

required. This resulted in limited availability of these items for other occupants. The findings highlight the importance of proper monitoring and equitable distribution of relief resources to ensure fairness and reduce the possibility of conflicts during shelter stays.

4.3.22 Availability of Cooking Facilities

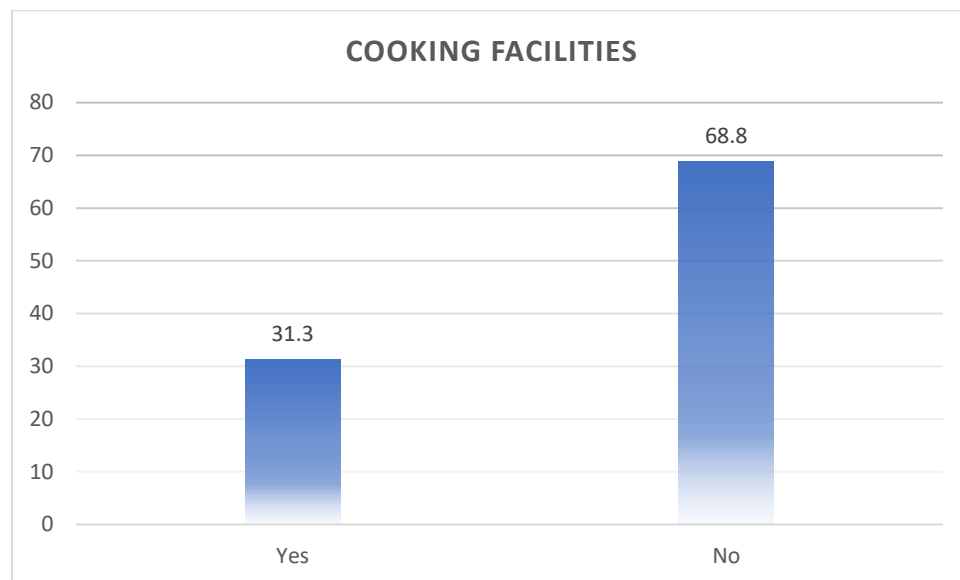


Fig. No 4 .23: Cooking facilities

Table 4.23 presents the respondents' opinions regarding the availability of cooking facilities in the kitchen of the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 55 (68.8%) reported that cooking facilities were not available, while only 25 (31.3%) stated that such facilities were available. The findings indicate that the majority of the shelters lacked cooking facilities. This suggests that most evacuees depended on externally supplied or community-prepared food rather than preparing meals within the shelter. The absence of cooking facilities may limit the shelter's capacity to support occupants during prolonged stays, highlighting the need to strengthen kitchen infrastructure in Multi-Purpose Cyclone Shelters.

4.3.23 Adequacy of cooking facilities

The findings related to cooking facilities and basic services in the Multi-Purpose Cyclone Shelters show that several essential arrangements require improvement. Regarding the availability of stoves, only 24 respondents (30%) reported that stoves were available, while 56 respondents (70%) stated that stoves were not available in the shelters. Similarly, 26 respondents (32.5%) reported the availability of cooking fuel such as LPG or firewood, whereas 54 respondents (67.5%) indicated that cooking fuel was unavailable. The availability of cooking ingredients was found to be very limited, with only 8 respondents (10%) reporting access to essential items like rice, pulses, oil, and spices, while 72 respondents (90%) stated that these items were not available.

The findings also show that 23 respondents (28.7%) felt that sufficient cooking utensils were available, while 57 respondents (71.3%) reported that utensils were insufficient. Similarly, only 25 respondents (31.3%) reported having adequate cooking space, whereas 55 respondents (68.8%) stated that sufficient cooking space was not available. In terms of cooking area facilities, 25 respondents (31.3%) reported proper ventilation, safe cooking arrangements, and fire safety measures, while 55 respondents (68.8%) reported the absence of these facilities. Adequate lighting in cooking areas was available according to 24 respondents (30%), whereas 56 respondents (70%) reported inadequate lighting.

Regarding other basic services, the availability of clean water was satisfactory, with 76 respondents (95%) confirming access to clean water and 4 respondents (5%) reporting its absence. Proper waste disposal facilities were available according to 77 respondents (96.3%), while 3 respondents (3.8%) reported a lack of such facilities.

The findings indicate that while water supply and waste management facilities were satisfactory, cooking-related facilities such as stoves, fuel, ingredients, utensils, cooking space, ventilation, fire safety, and lighting require further strengthening to improve shelter preparedness and support long-term occupancy during disaster situations.

4.3.24 Food Availability in Shelter

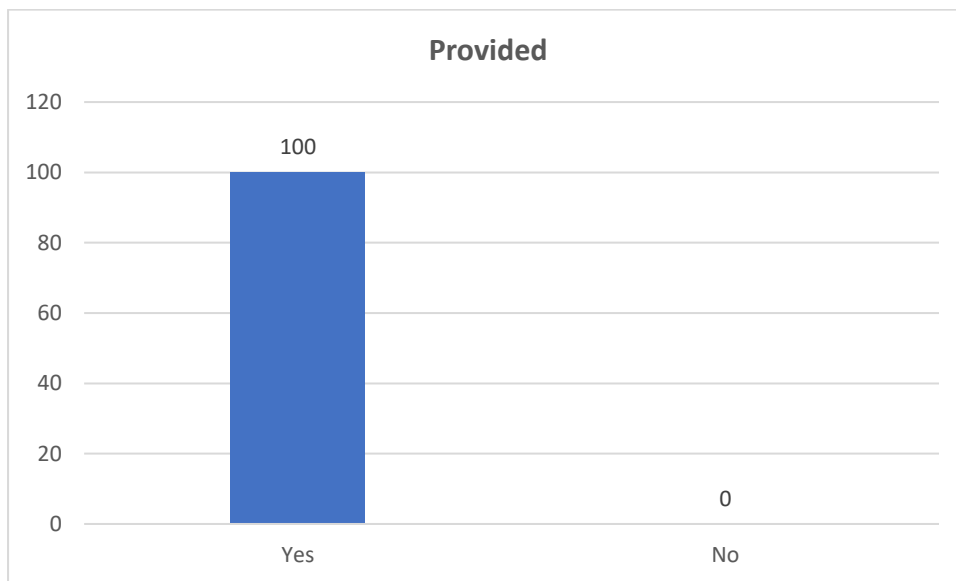


Fig. No 4 .24: Food availability

Table 4.24 presents the respondents' opinions regarding the availability of food during their stay in the Multi-Purpose Cyclone Shelter (MPCS). All 80 respondents (100%) reported that food was provided in the shelter during their stay. The findings indicate that all respondent received food while staying in the shelter during the disaster. Based on the responses collected during the survey, food was supplied through community kitchens operating in the MPCS, nearby hotels, *pothichoru* (packed home-cooked meals), and food collected from local households and volunteers. This reflects strong community participation and coordinated support from local authorities and volunteers in ensuring a continuous food supply. The findings suggest that the Multi-Purpose Cyclone Shelters effectively met the nutritional needs of evacuees during disaster situations through both institutional and community-based support systems.

4.3.25 Regularity of Food Distribution

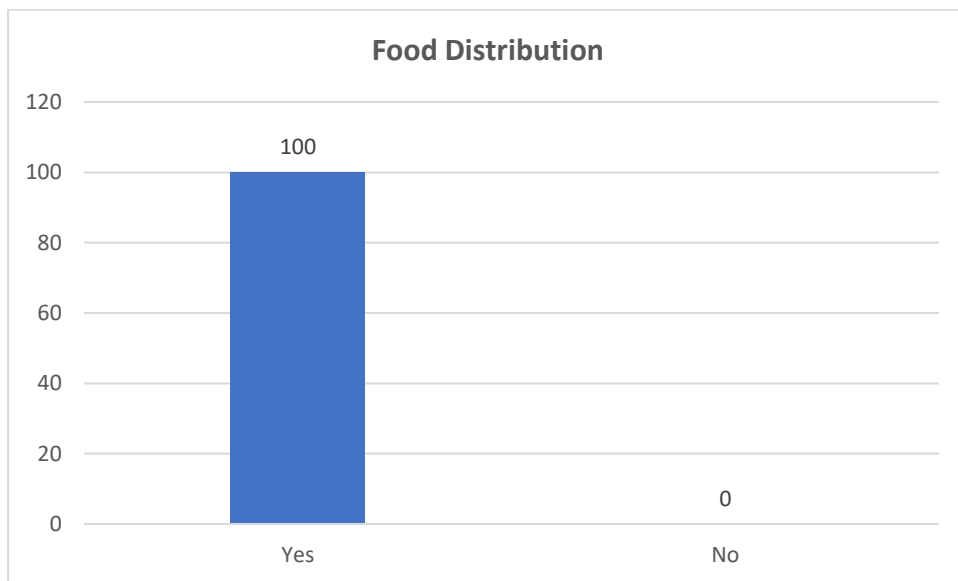


Fig. No 4 .25: Food distribution regularity

Table 4.25 presents the respondents' opinions regarding the regularity of food distribution during their stay in the Multi-Purpose Cyclone Shelter (MPCS). All 80 respondents (100%) reported that food was distributed regularly throughout their stay in the shelter. The findings indicate that the food distribution system functioned effectively without interruptions during the disaster period. Regular food distribution ensured that the nutritional needs of the evacuees were consistently met. This reflects efficient coordination among local authorities, community kitchens, volunteers, and other supporting agencies in maintaining an uninterrupted food supply during emergencies.

4.3.26 Timeliness of Food Distribution

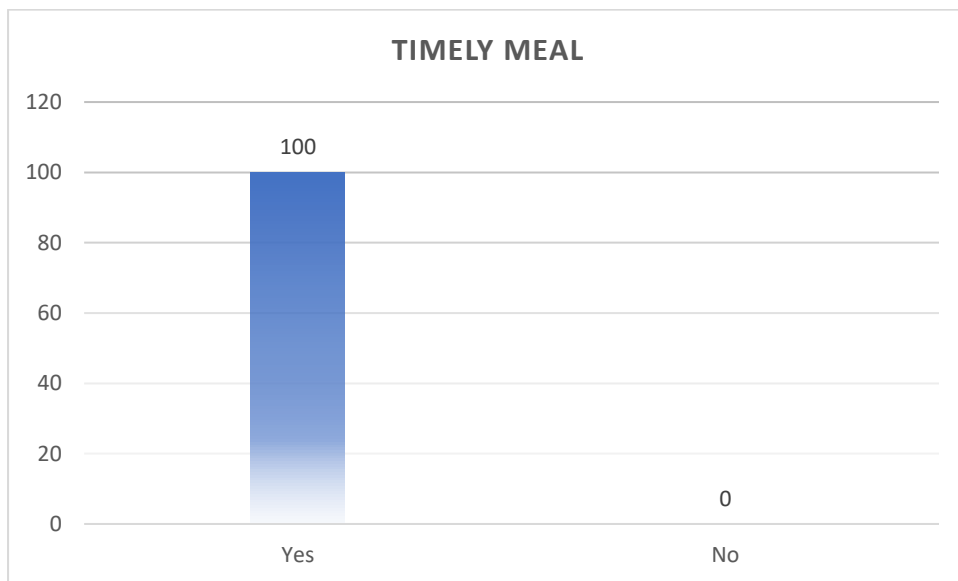


Fig. No 4 .26: Timely food distribution

Table 4.26 presents the respondents' opinions regarding the timeliness of food distribution during their stay in the Multi-Purpose Cyclone Shelter (MPCS). All 80 respondents (100%) reported that food was distributed on time for every meal. The findings indicate that the shelters maintained a consistent and well-organised meal distribution system throughout the disaster period. Timely distribution of food ensured that the basic nutritional needs of all evacuees were met without delay. This reflects effective coordination among local authorities, community kitchens, volunteers, and other supporting agencies in managing food services within the shelters during emergencies.

4.3.27 Hygiene During Food Distribution

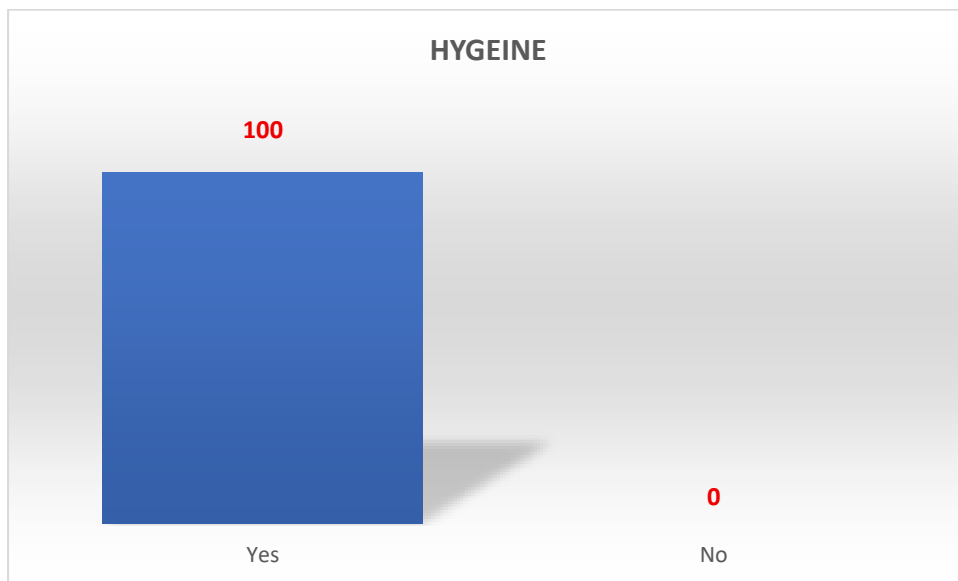


Fig. No 4 .27: Food distribution hygiene

Table 4.27 presents the respondents' opinions regarding the hygiene maintained during food distribution in the Multi-Purpose Cyclone Shelter (MPCS). All 80 respondents (100%) reported that adequate hygiene was maintained during food distribution. The findings indicate that food was prepared, handled, and distributed under hygienic conditions throughout the respondents' stay in the shelter. Maintaining proper hygiene during food distribution helped reduce the risk of food-borne diseases and ensured the safety of the evacuees. This reflects effective coordination and adherence to hygiene standards by local authorities, community kitchens, volunteers, and other agencies involved in food distribution during disaster situations.

4.3.28 Adequacy of Sleeping Space



Fig. No 4 .28: Sleeping space adequacy

Table 4.28 presents the respondents' opinions regarding the adequacy of sleeping space for each family member during their stay in the Multi-Purpose Cyclone Shelter (MPCS). All 80 respondents (100%) reported that adequate sleeping space was available for every family member. The findings indicate that the shelters provided sufficient space to accommodate all occupants comfortably during the disaster period. Adequate sleeping arrangements contributed to the comfort, privacy, and well-being of the evacuees, particularly during extended stays. This suggests that the Multi-Purpose Cyclone Shelters were effective in providing appropriate accommodation facilities and ensuring a safe and comfortable environment for disaster-affected families.

4.3.29 Availability of Medical Facilities

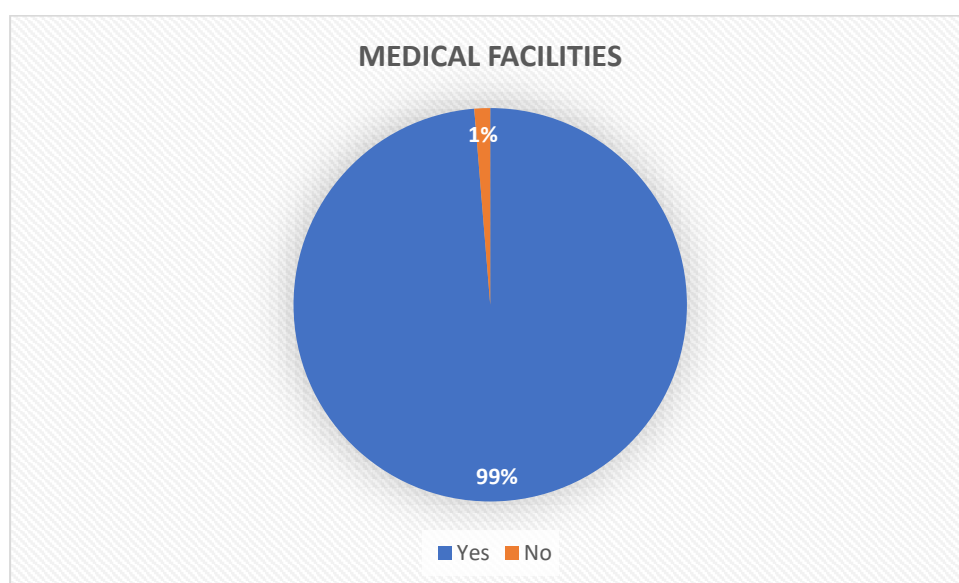


Fig. No 4 .29: Medical facilities

Table 4.29 presents the respondents' opinions regarding the availability of medical facilities during their stay in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 79 (98.8%) reported that medical facilities were available, while only 1 (1.3%) stated that such facilities were not available. The findings indicate that almost all respondents had access to basic medical services during their stay in the shelter. However, responses from the field revealed that the stock of medicines available in some shelters was insufficient to meet all medical needs. As a result, some evacuees had to visit nearby Community Health Centres (CHCs) or purchase medicines from outside the shelter. These findings suggest that while the Multi-Purpose Cyclone Shelters ensured the availability of basic healthcare services, there is a need to strengthen the supply of essential medicines to provide comprehensive medical support during disaster situations.

4.3.30 Availability of First-Aid Facilities

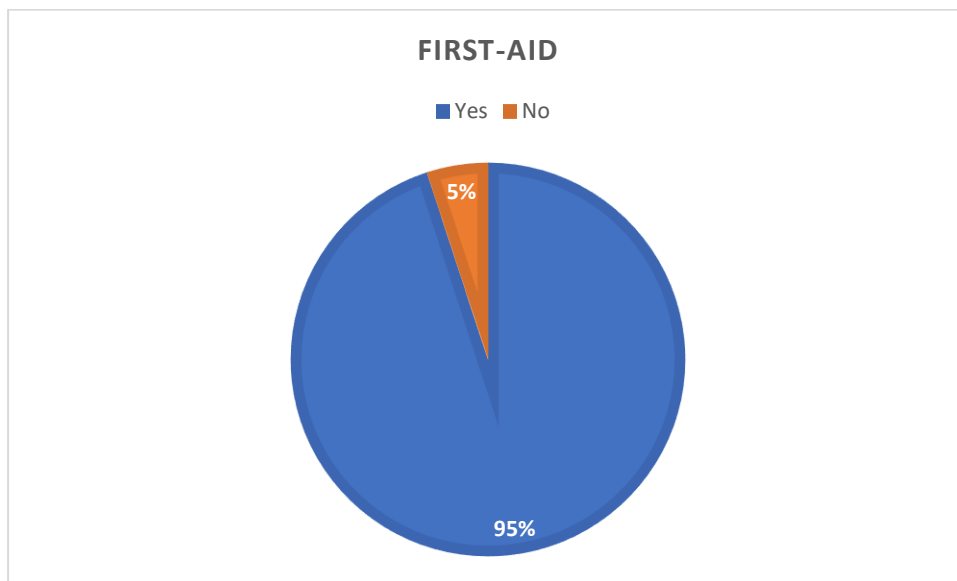


Fig. No 4 .30: First-Aid facilities

Table 4.30 presents the respondents' opinions regarding the availability of first-aid facilities during their stay in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 76 (95.0%) reported that first-aid facilities were available, 1 (1.3%) stated that first-aid facilities were not available, and 3 (3.8%) indicated that the question was not applicable because they did not require first-aid services during their stay. The findings indicate that the majority of the shelters were equipped with basic first-aid facilities to manage minor injuries and health emergencies. The respondents who selected "None" reported that they did not require first-aid treatment, rather than indicating the absence of first-aid facilities. This suggests that the Multi-Purpose Cyclone Shelters were generally prepared to provide immediate medical assistance during disaster situations. However, efforts should be made to ensure that first-aid facilities remain consistently available and easily accessible in all shelters.

4.5. To assess the extent to which MPCS meets the needs of vulnerable groups (differently abled & women).

To assess the Multi-Purpose Cyclone Shelters, meet the needs of vulnerable groups, especially persons with disabilities and women. It focuses on the availability of ramps, accessible toilets, privacy, and separate sanitation facilities for women and men. It also assesses whether these facilities are adequate, accessible, and safe for all shelter inmates during disaster situations.

4.5.1 Adequacy of Accessible Toilets

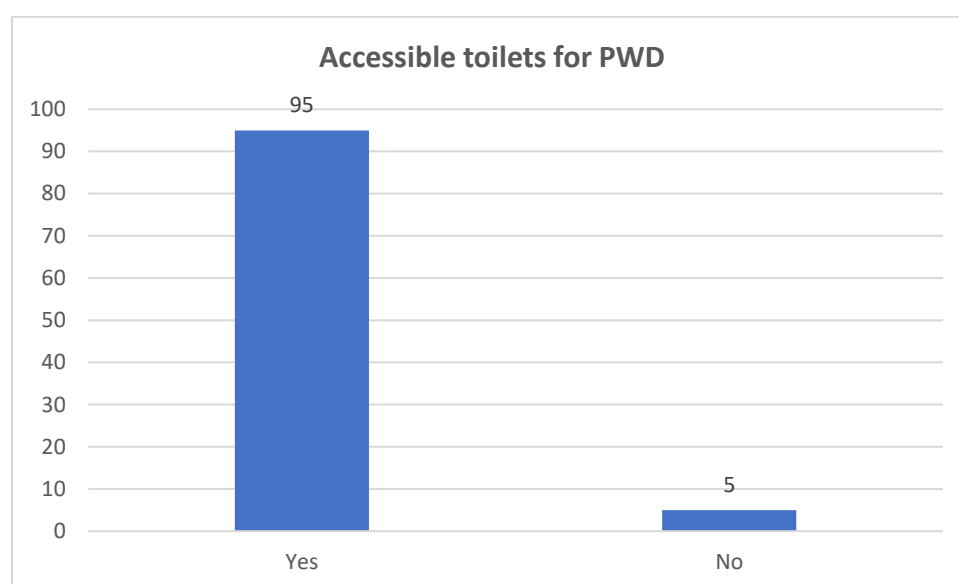


Fig. No 4 .31: Accessible toilets

Table 4.31 presents the respondents' opinions regarding whether the accessible toilets in the Multi-Purpose Cyclone Shelter (MPCS) were sufficient and convenient for persons with disabilities. Among the 80 respondents, 76 (95.0%) indicated that the question was not applicable because accessible toilets were not available in their shelters, while only 4 (5.0%) reported that the accessible toilets were sufficient and convenient. The findings indicate that very few shelters provided accessible toilet facilities for persons with disabilities. This reflects a lack of inclusive sanitation infrastructure in most of the shelters. Improving disability-friendly facilities is essential to ensure that the needs of persons with disabilities are adequately addressed during disaster situations.

4.5.2 Privacy Provision in Shelter

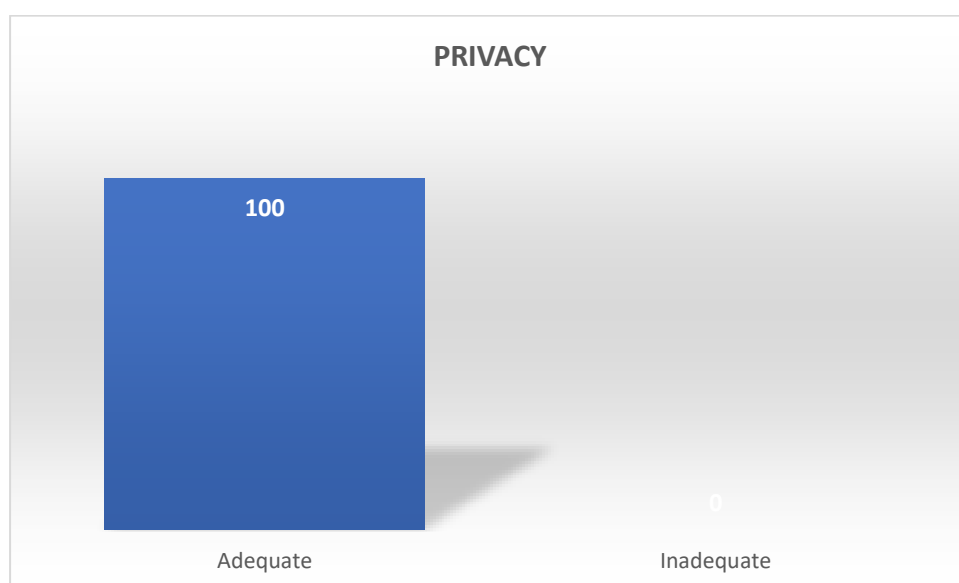


Fig. No 4 .32: Shelter privacy

Table 4.32 presents the respondents' opinions regarding the availability of privacy for women, girls, and men during their stay in the Multi-Purpose Cyclone Shelter (MPCS). All 80 respondents (100%) reported that adequate privacy was provided in the shelter. The findings indicate that the shelter arrangements supported the privacy and dignity of evacuees during the disaster period. Based on the field responses, separate sleeping areas were arranged wherever sufficient space was available, and families were allowed to stay together to maintain comfort and privacy. Some of the shelters accommodated only a small number of inmates; therefore, only a few families stayed in

The majority of the inmates were women, while many men stayed at their friends' houses or actively supported shelter activities as volunteers. In situations where the number of inmates increased and space became limited; some men stayed in corridor areas due to the shortage of available sleeping spaces. These findings suggest that MPCS management made efforts to maintain privacy and accommodate the needs of different groups, although additional space planning may be required during overcrowding situations.

4.5.3 Availability of Ramps

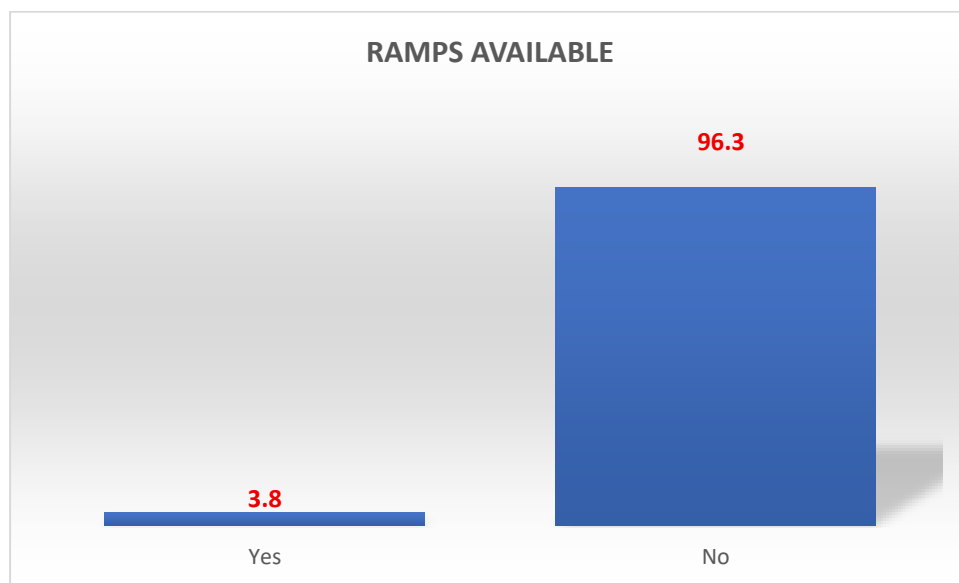


Fig. No 4 .33: Ramp availability

Table 4.33 presents the respondents' opinions regarding the availability of ramps for persons with disabilities in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 77 (96.3%) reported that ramps were not available in the shelter, while only 3 (3.8%) respondents stated that ramps were available. The findings indicate that most of the MPCS lacked proper accessibility facilities for persons with disabilities during their stay. The absence of ramps may create difficulties for persons with mobility limitations, including persons with disabilities, elderly individuals, and injured evacuees, in accessing shelter facilities independently. The findings highlight the need to improve the accessibility features of MPCS by ensuring the availability of ramps and other inclusive infrastructure to support vulnerable groups during disaster situations.

Ramps were not available in some shelters, and the toilets were not accessible for persons with disabilities during disasters. Certain disability conditions made it difficult for them to use the available toilet facilities. The shelter management recognized these challenges and shifted affected individuals to hospitals when necessary. Some shelters provided wheelchairs and walking sticks to support persons with disabilities during disaster situations.

4.5.4 Adequacy of Ramps

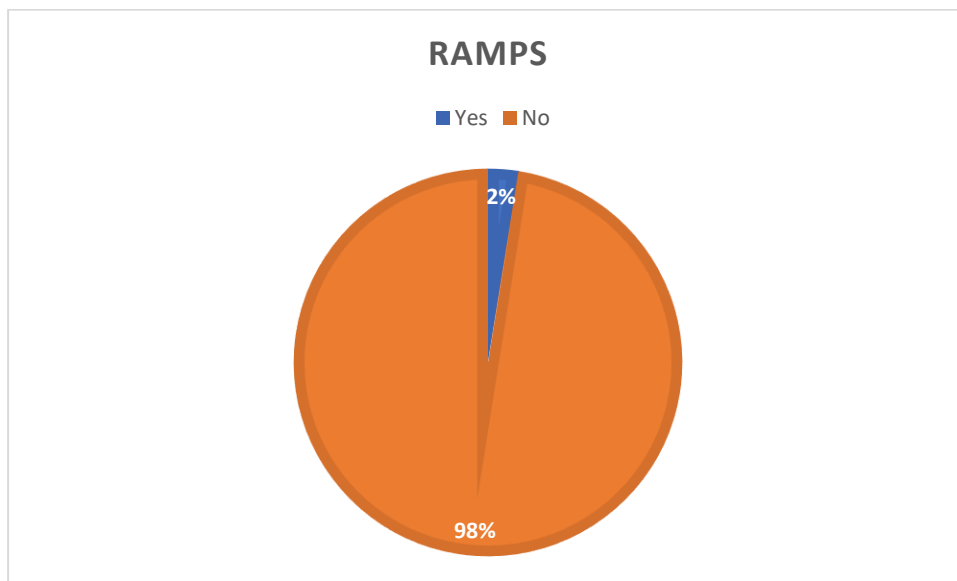


Fig. No 4 .34: Ramp adequacy

Table 4.34 presents the respondents' opinions regarding the sufficiency and convenience of ramps for persons with disabilities in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 78 (97.5%) reported that the ramps were not sufficient and convenient, while only 2 (2.5%) respondents stated that the ramps were adequate and convenient. The findings indicate that most MPCS lacked permanent and appropriate accessibility facilities for persons with disabilities. Based on the field responses, some shelters arranged temporary ramps, which were obtained from hospitals or ambulances, to support the movement of persons with mobility difficulties during emergencies. However, these temporary arrangements may not fully meet the accessibility requirements of all vulnerable groups. The findings highlight the need for developing permanent, properly designed, and user-friendly ramps in MPCS to ensure inclusive access and safety for persons with disabilities, elderly individuals, and other vulnerable populations during disasters.

4.5.5 Availability of Accessible Toilets

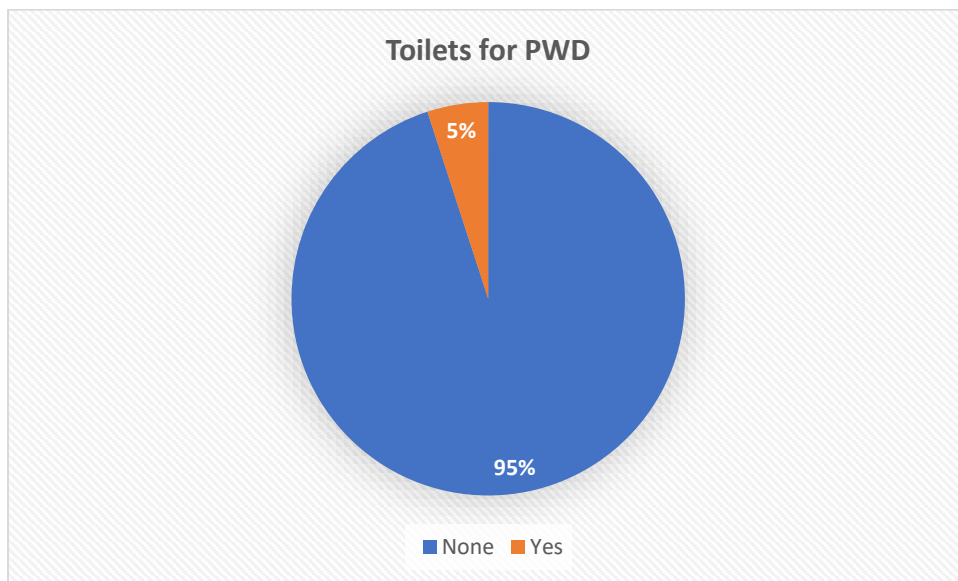


Fig. No 4 .35: Accessible toilet availability

Table 4.35 presents the respondents' views on the availability of accessible toilets for persons with disabilities in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 76 (95.0%) reported that accessible toilets were not available, while only 4 (5.0%) stated that such facilities were available. The findings indicate that the majority of the shelters lacked accessible toilet facilities for persons with disabilities. This suggests a significant gap in the inclusiveness of the shelter infrastructure. The absence of accessible sanitation facilities may create difficulties for persons with disabilities during emergencies and highlights the need for disability-friendly facilities in Multi-Purpose Cyclone Shelters.

4.5.6 Adequacy of privacy

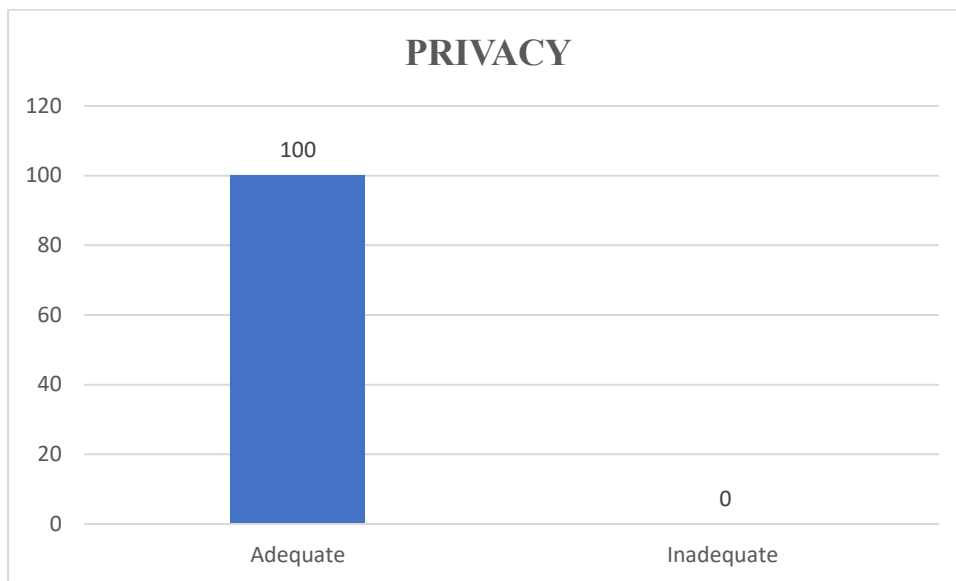


Fig. No 4 .36: Privacy adequacy

All 80 respondents (100%) reported that adequate privacy was provided for women, girls, and men during their stay in the Multi-Purpose Cyclone Shelter. Separate spaces and arrangements ensured privacy for all occupants. The findings indicate that the shelter management maintained appropriate measures to provide a safe, secure, and dignified environment for all individuals throughout their stay.

4.5.7 Privacy arrangements in the shelter

The privacy and gender-sensitive facilities in the Multi-Purpose Cyclone Shelters show that most arrangements were effectively provided to ensure the safety, dignity, and comfort of evacuees. The data reveals that all 80 respondents (100%) reported the availability of separate sleeping areas for men, girls, children, and women. Similarly, 100% of respondents confirmed that separate changing areas were available in the shelters. These facilities indicate that the shelters have considered the privacy requirements of different groups during disaster situations.

The findings also show that all 80 respondents (100%) reported the presence of partitioned spaces in shared rooms, which helps create personal space and improves comfort for occupants staying in common areas. In terms of sanitation facilities, 100% of respondents confirmed that toilets and bathrooms had lockable doors, ensuring privacy and security for users.

However, the availability of screening arrangements was found to be inadequate. Only 7 respondents (8.8%) reported that adequate screening or curtains were available, while 73 respondents (91.3%) stated that such facilities were not available. This indicates a gap in providing additional privacy measures, especially in shared accommodation areas.

Regarding shelter management, all 80 respondents (100%) reported that there was adequate supervision by staff to ensure privacy. Similarly, 100% of respondents stated that there was a sufficient distance between male and female areas within the shelters. These findings highlight the role of proper management practices in maintaining privacy and safety.

The Multi-Purpose Cyclone Shelters have strong privacy arrangements through separate spaces, secure sanitation facilities, and effective staff supervision. However, improving screening facilities such as curtains or temporary partitions would further enhance privacy, particularly for women and vulnerable groups during prolonged shelter stays.

4.5.8 Challenges to privacy in the Shelter

The findings related to privacy and gender-sensitive arrangements in the Multi-Purpose Cyclone Shelters indicate that most of the essential facilities required for ensuring safety, dignity, and comfort of evacuees were properly maintained. The data shows that all 80 respondents (100%) reported that there were no concerns regarding the absence of separate sleeping areas for men and women. Similarly, 100% of respondents stated that separate changing areas were available and that shared rooms without partitions were not an issue in the shelters.

Regarding sanitation facilities, all 80 respondents (100%) reported that toilets and bathrooms were provided with lockable doors, ensuring privacy and safe usage. The findings also show that 100% of respondents reported that there was no lack of curtains or screening facilities, indicating that privacy arrangements were available within the shelter spaces. Similarly, all respondents confirmed that there were no concerns related to insufficient staff supervision and that shelter staff adequately monitored activities to ensure privacy and safety.

The arrangement of accommodation spaces was also found to be satisfactory, as all 80 respondents (100%) reported that male and female areas were not too close and that sufficient distance was maintained between them. This indicates that the shelters followed proper spatial planning while allocating areas for different groups.

The Multi-Purpose Cyclone Shelters have effectively addressed privacy and gender-related requirements through separate accommodation arrangements, secure sanitation facilities, proper supervision, and suitable space management. These facilities contribute to creating a safe, organised, and respectful environment for evacuees during disaster situations. Continuous monitoring and maintenance of these arrangements are necessary to ensure that privacy and safety standards are maintained in future emergencies.

4.5.9 Availability of Separate Toilet Facilities



Fig. No 4 .37: Separate toilets

All 80 respondents (100%) reported that separate toilet facilities for women and men were adequately provided during their stay in the Multi-Purpose Cyclone Shelter. The findings indicate that the shelters had separate rooms for men and women, and each section had separate toilet facilities. This arrangement enabled men and women to use the toilets independently and adequately throughout their stay. During the field observation, it was also found that the toilets had lockable doors, which helped maintain privacy and dignity. Overall, the availability of

separate rooms and separate toilet facilities contributed to a safe, hygienic, and comfortable environment for all shelter occupants during disaster situations.

4.6. To assess the extent to which the community utilises MPCS during non-disaster periods.

Examines how Multi-Purpose Cyclone Shelters are used by the local community during non-disaster periods. It focuses on community awareness of the shelters and the activities conducted, such as meetings, awareness programmes, training programmes, health camps, and other community events. It also assesses whether the shelters are regularly used and help the community become familiar with the facilities and better prepared for future disasters.

4.6.1 Use of MPCS for Community Activities

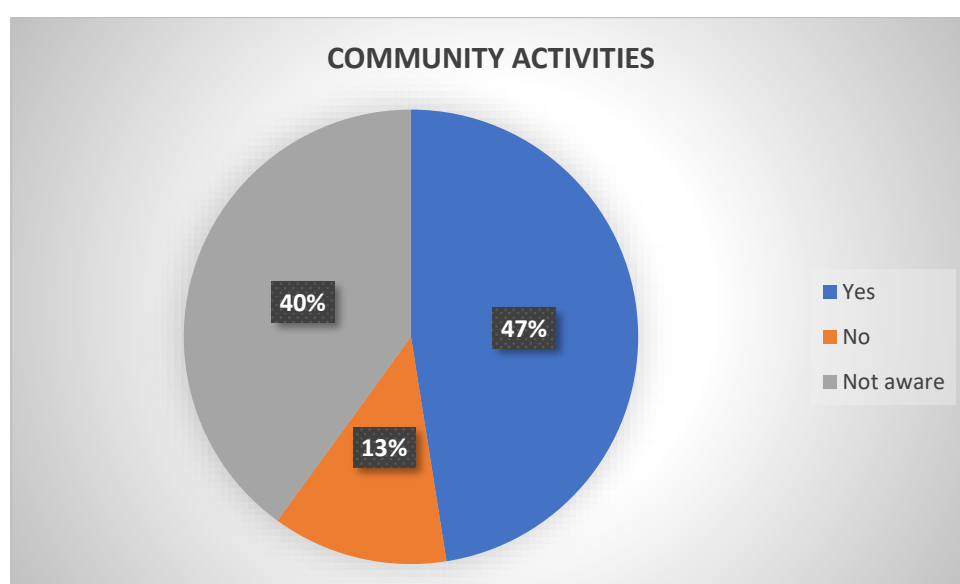


Fig. No 4 .38: Community use

Table 4.38 presents the respondents' opinions regarding the use of Multi-Purpose Cyclone Shelters (MPCS) for community activities during non-disaster periods. Among the 80 respondents, 38 (47.5%) reported that the shelters were used for community activities, 10 (12.5%) stated that they were not used, and 32 (40.0%) were not aware of such activities. The findings indicate that nearly half of the respondents recognised the use of MPCS for community purposes during normal periods, while a considerable proportion lacked awareness about these activities. Based on the responses collected during the survey, the shelters are used for various community activities such as nursery classes, training programmes, gym facilities, disaster

awareness classes, Buds School activities, Kudumbashree meetings, and municipality meetings. This suggests that the Multi-Purpose Cyclone Shelters function not only as emergency shelters during disasters but also as important community centres that support social, educational, and developmental activities throughout the year.

4.6.2 Distance to MPCS

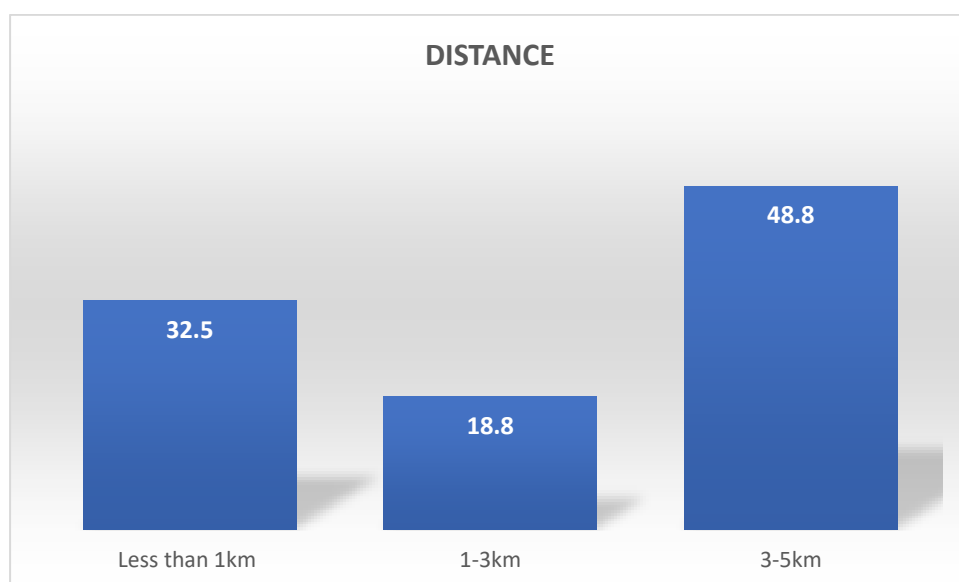


Fig. No 4 .39: Distance to MPCS

Table 4.39 presents the distance of the Multi-Purpose Cyclone Shelter (MPCS) from the respondents' residences. Among the 80 respondents, 39 (48.8%) reported that the MPCS was located at a distance of 3–5 km from their residence, 26 (32.5%) reported that it was within less than 1 km, and 15 (18.8%) stated that it was located 1–3 km away. The findings indicate that nearly half of the respondents had to travel a distance of 3–5 km to reach the shelter during disaster situations. Although the shelters were accessible to the community, the distance may influence the ease and speed of evacuation, particularly for vulnerable groups such as older persons, children, pregnant women, and persons with disabilities. The findings highlight the importance of ensuring accessible transportation and proper evacuation support systems to facilitate timely movement to MPCS during emergencies.

4.6.3 Ease of Access to MPCS

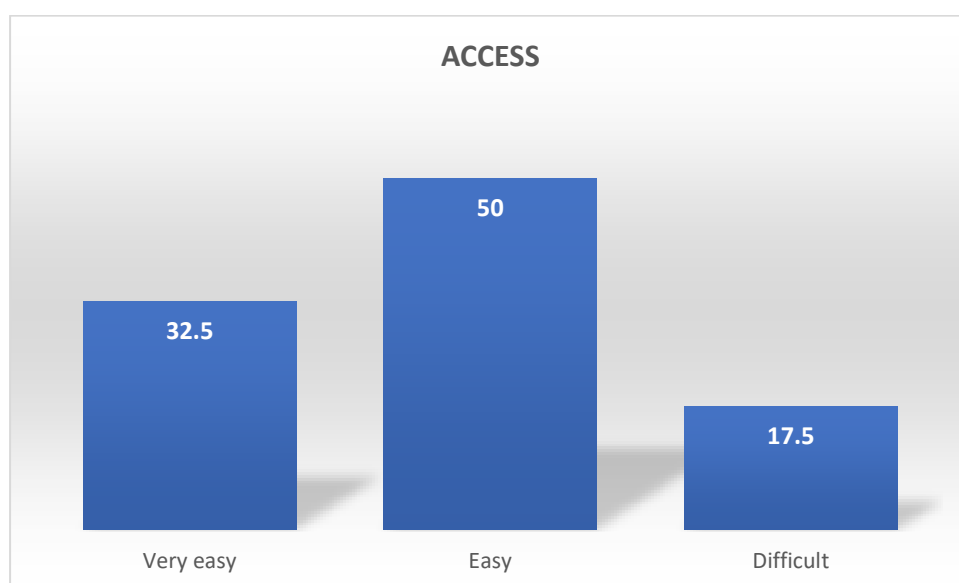


Fig. No 4 .40: Shelter accessibility

Table 4.40 presents the respondents' opinions regarding the ease of access to the Multi-Purpose Cyclone Shelter (MPCS) during disaster situations. Among the 80 respondents, 40 (50.0%) reported that accessing the MPCS was easy, 26 (32.5%) stated that it was very easy, and 14 (17.5%) reported that access was difficult. The findings indicate that the majority of respondents were able to reach the shelter without major difficulties during emergencies. However, some respondents experienced challenges in accessing the MPCS. Based on the field responses, those who reported difficulty were mainly residents living near canals and areas with damaged or unsuitable roads, where transportation and movement became challenging during disaster situations. These findings highlight the need for improving evacuation routes, road connectivity, and transportation support to ensure safe and timely access to MPCS, particularly for vulnerable communities during emergencies.

4.7. To evaluate the functioning of institutional mechanisms of MPCS.

The functioning of the institutional mechanisms responsible for managing Multi-Purpose Cyclone Shelters during disaster and non-disaster periods. It focuses on the role of the Shelter Management Committee, local self-government institutions, disaster response teams, and other officials in maintaining the shelters, providing essential services, coordinating emergency

response, and addressing the needs and grievances of shelter inmates. It also assesses the support provided by these institutions to ensure the effective management of the shelters.

4.7.1 Conflicts Due to Lack of Facilities



Fig. No 4 .41: Facility-related conflicts

Table 4.41 presents the respondents' opinions on whether they experienced conflicts with other inmates due to insufficient basic facilities in the Multi-Purpose Cyclone Shelter (MPCS). All 80 respondents (100%) reported that they did not experience any conflicts related to the availability of basic facilities. The findings indicate that the shelters generally provided adequate essential facilities to meet the needs of the occupants. This suggests that the availability of basic amenities did not contribute to interpersonal conflicts among the evacuees. The results also reflect effective shelter management in maintaining sufficient basic facilities and ensuring a comfortable environment during the disaster period.

4.7.2 Functions of the Shelter Management Committee

The findings indicate that the Multi-Purpose Cyclone Shelters were well managed and provided comprehensive support services to the affected communities during disaster situations. All 80 respondents (100%) reported that registration of inmates and proper allocation of space were carried out effectively. Similarly, 100% confirmed that arrangements for accommodation, food, and safe drinking water were properly organised. Every respondent also stated that evacuation

and rescue assistance, safety and special care for women, children, pregnant women, elderly persons, and persons with disabilities, support in distributing relief materials and logistics, monitoring disaster conditions with timely warnings, ensuring safety, security and crowd management, and coordination with local authorities and shelter management committees were effectively provided. In addition, 100% of respondents reported that they had received one or more forms of support, as none selected the option "No specific support received."

Regarding other management services, 79 respondents (98.8%) stated that cleanliness, sanitation, and waste disposal were properly maintained, while 1 respondent (1.3%) reported otherwise. Likewise, 79 respondents (98.8%) confirmed that official information and guidance were communicated effectively, shelter buildings and equipment were properly maintained, first aid and emergency medical support were available, and assistance was provided in managing essential services such as water, electricity, lighting, and generators. 76 respondents (95%) also reported that basic health care and psychosocial support were available, whereas 4 respondents (5%) indicated that these services were not provided.

Maintained a high standard of management and emergency support. Most essential services were consistently available, while only a few respondents pointed to minor gaps in health care, psychosocial support, communication, maintenance, and management of essential services. These results reflect the overall effectiveness of shelter management in meeting the needs of evacuees during disaster situations.

4.7.3 Cooperation with Shelter Staff and Officials

The findings indicate that the majority of inmates showed cooperation and participation in activities conducted within the Multi-Purpose Cyclone Shelters. Among the 80 respondents, 58 respondents (72.5%) reported that inmates participated in different activities and cooperated with shelter management. This indicates that most occupants were willing to support the functioning of the shelter and contribute to maintaining an organised environment during emergency situations.

22 respondents (27.5%) stated that some inmates did not cooperate in any activity. This shows that although overall participation was positive, a considerable proportion of occupants remained uninvolved in shelter-related activities. Non-participation may be influenced by factors such as age, physical limitations, health conditions, lack of awareness, emotional stress during disasters, or limited opportunities for involvement.

The participation of shelter occupants plays an important role in effective disaster shelter management. Cooperation from inmates can support activities such as maintaining cleanliness, managing resources, assisting vulnerable groups, following shelter rules, and ensuring smooth coordination among occupants and authorities. Encouraging community participation can also reduce the burden on shelter management teams and promote a sense of collective responsibility.

Overall, the findings suggest that most inmates actively cooperated in shelter activities, while some individuals required additional encouragement and support to participate. Creating opportunities for involvement, providing clear information about responsibilities, and considering the abilities and needs of different groups can improve participation and strengthen the overall management of Multi-Purpose Cyclone Shelters during disaster situations.

4.7.4 Support from Shelter Management Committee

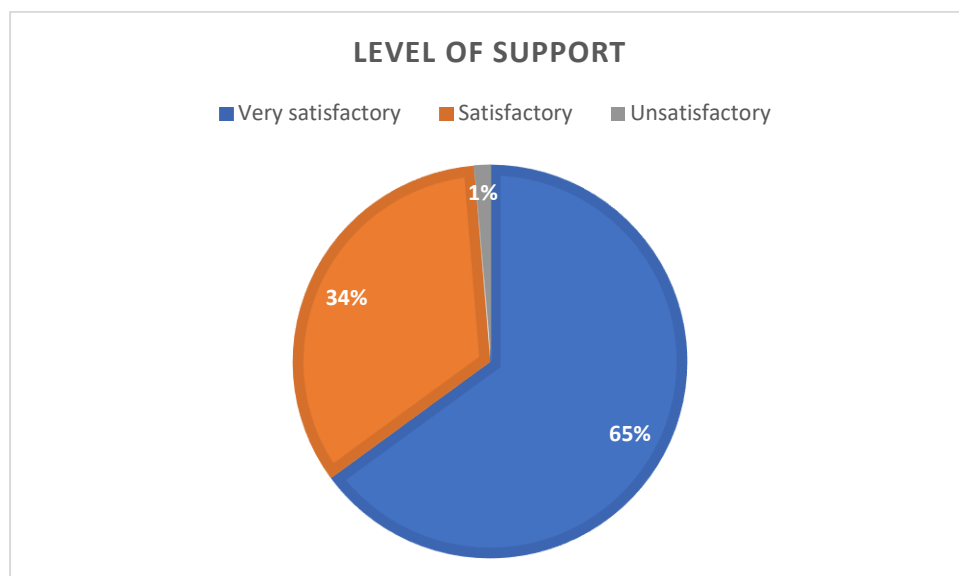


Fig. No 4 .42: Management support

Table 4.30 presents the respondents' opinions regarding the overall level of support they received from the shelter management and disaster response teams during their stay in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 52 (65.0%) rated the support as very satisfactory, 27 (33.8%) rated it as satisfactory, and only 1 (1.3%) rated it as unsatisfactory. The findings indicate that the majority of the respondents were highly satisfied with the assistance and services provided during their stay. This suggests that the shelter management and disaster response teams responded effectively to the needs of the evacuees and ensured their safety and well-being. The high level of satisfaction reflects efficient coordination, timely assistance, and effective management of the Multi-Purpose Cyclone Shelters during disaster situations.

4.7.5 Grievances During Shelter Stay

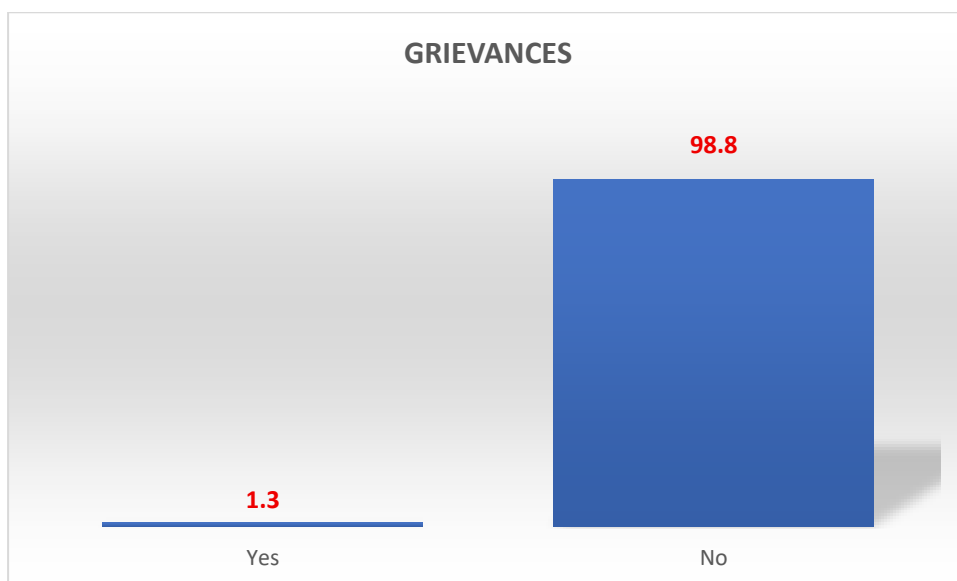


Fig. No 4 .43: shelter grievances

Table 4.41 presents the respondents' experiences regarding grievances during their stay in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 79 (98.8%) reported that they did not have any grievances during their stay, while only 1 (1.3%) respondent reported having a grievance. The reported grievance was related to the inadequacy of water availability for basic needs within the shelter. Although the majority of respondents were satisfied with the facilities and services provided, the finding highlights that water availability remains an

important concern that requires attention during disaster situations. Ensuring a continuous and sufficient supply of water for drinking, cooking, washing, and other daily needs is essential for maintaining the health and comfort of evacuees. The findings emphasize the need for proper resource planning and management to address basic facility requirements in MPCS during emergencies.

4.7.6 Suggestions for Improvement

The findings indicate that reliable emergency power supply facilities were largely unavailable in the surveyed Multi-Purpose Cyclone Shelters. Among the 80 respondents, only 1 respondent (1.3%) reported the availability of emergency power backup facilities such as generators or solar power systems. In contrast, 79 respondents (98.8%) stated that reliable emergency power supply arrangements were not available.

The results clearly show that emergency power management is a major area requiring improvement in the shelters. During disaster situations, electricity plays an important role in maintaining essential services such as lighting, communication facilities, medical support, water supply systems, and overall shelter operations. Power interruptions during cyclones, floods, or other emergencies can create additional difficulties for both shelter management and occupants.

The findings suggest that most of the surveyed shelters do not have adequate backup power systems, or the available arrangements were not functional or accessible during the period of assessment. The absence of reliable alternatives such as generators or solar power may affect the continuity of essential services, particularly during extended power failures.

The emergency power supply systems need considerable attention in the surveyed Multi-Purpose Cyclone Shelters. Establishing suitable backup power arrangements, ensuring regular maintenance of equipment, and exploring sustainable options such as solar energy can improve disaster preparedness. Strengthening emergency power facilities will support uninterrupted shelter functioning and help provide a safer environment for evacuees during disaster situations.

4.7.7 Alcohol and Substance Use Incidents

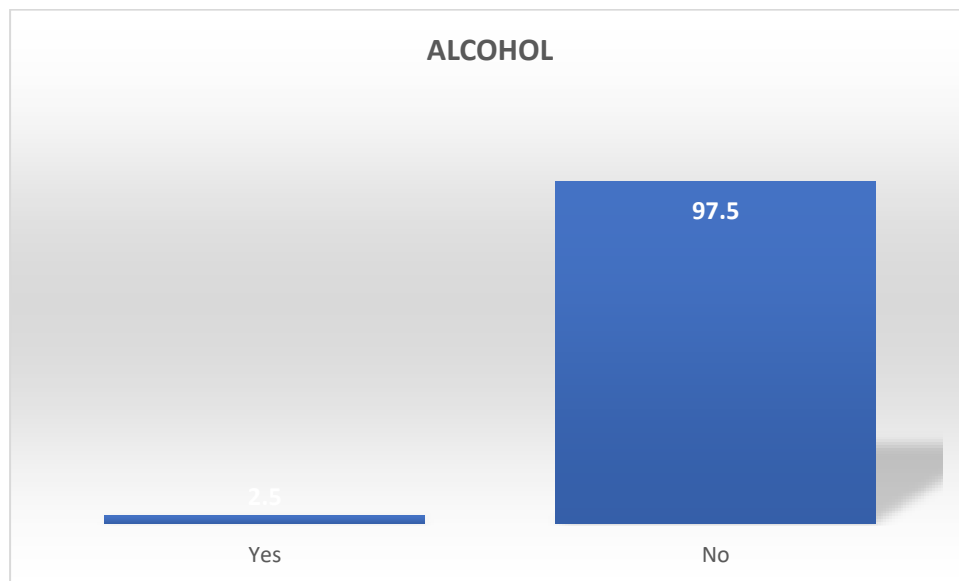


Fig. No 4 .44: Alcohol use in MPCS

Table 4.42 presents the respondents' observations regarding the incidence of alcohol or substance use among men or youth during their stay in the Multi-Purpose Cyclone Shelter (MPCS). Among the 80 respondents, 78 (97.5%) reported that they did not observe any alcohol or substance use during their stay, while 2 (2.5%) respondents reported that such incidents occurred. The findings indicate that substance use was not a common issue among the shelter inmates. Based on the field responses, some young boys and men were found using alcohol and pan during the shelter period. However, the security personnel and shelter management took preventive measures by restricting individuals under the influence of substances from entering the shelter premises. These actions helped maintain discipline, safety, and a supportive environment for other inmates. The findings highlight the importance of effective security arrangements, monitoring, and awareness programmes to prevent substance-related issues during disaster shelter operations.

4.7.8 Control of Alcohol or Substance Use in the Shelter

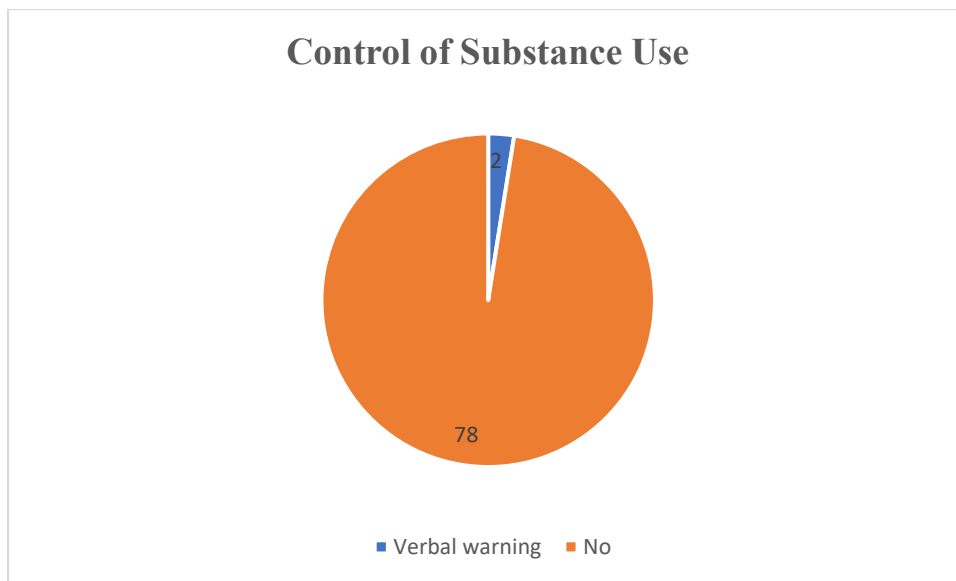


Fig. No 4.45: Controlling of alcohol use

Out of the 80 respondents, 78 respondents (97.5%) reported that no incidents of alcohol or substance use occurred during their stay in the Multi-Purpose Cyclone Shelter. Only 2 respondents (2.5%) reported that alcohol use had occurred and was controlled through verbal warnings issued by the shelter authorities.

During data collection in Thiruvananthapuram, two respondents shared that a few young men arrived at the shelter after consuming alcohol during the disaster period. According to the respondents, the shelter management authorities immediately intervened, issued verbal warnings, and resolved the situation without causing further disturbance. They also stated that the shelter authorities closely monitored the shelter environment to maintain discipline and ensure the safety and security of all occupants. Overall, the findings indicate that incidents of alcohol or substance use were very limited and were effectively managed by the shelter authorities.

CONCLUSION

The data analysis and interpretation of the study provide insights into the effectiveness of Multi-Purpose Cyclone Shelters (MPCS) in disaster preparedness and response. The findings show that most shelters have basic facilities such as electricity, drinking water, toilets, accessible locations, separate sleeping arrangements, changing spaces, and basic privacy measures. Shelter management practices, including registration of inmates, accommodation arrangements, evacuation support, coordination with local authorities, and distribution of relief materials, were reported positively by respondents. These facilities indicate that MPCS play an important role in providing immediate protection and support to communities during disaster situations.

The study also identified several gaps that affect the overall functioning of shelters. Limited availability of cooking facilities, food distribution systems, sanitation improvement, emergency power supply, psychological support, communication assistance, and specialised services for vulnerable groups were observed. Elderly persons, children, and persons with disabilities require greater attention through accessible facilities and dedicated support mechanisms. The occupational profile of respondents also shows that many shelter users belong to economically vulnerable groups, particularly daily wage workers, whose livelihoods are highly affected during disasters. Overall, the study concludes that MPCS are essential components of disaster management in Kerala, but strengthening infrastructure, improving essential services, and ensuring inclusive shelter management are necessary to enhance their effectiveness and provide safer conditions for all occupants.

4.8 ANALYSIS OF SHELTERS

MULTI-PURPOSE CYCLONE SHELTERS OBSERVATION CHECK-LIST

Kerala has 16 Multi-Purpose Cyclone Shelters (MPCSs), of which 10 shelters were visited for the field assessment.

The multi-purpose cyclone shelter assessment was conducted in: Kollam, Alappuzha, Ernakulam, Thrissur, Kozhikode, Kannur, Kasargod. The observation focused on the physical

infrastructure, basic services, accessibility, governance, maintenance, and functioning of the shelters during both disaster and non-disaster periods.

The research was conducted in different districts. Permission for assessing the shelters was obtained from the Village Offices and Panchayat Offices.

The study examined the maintenance, sustainability, effectiveness, and accessibility of the shelters. Most shelters function under the control of Panchayats and Municipalities. Some are managed by Mayors and Village Officers, while others are supervised by Panchayat officials and Village Officers.

Before cyclone shelters were established, schools were mainly used as relief camps during disasters. A similar situation was seen in Bangladesh, where schools and other public buildings were used as cyclone shelters. After the rise in disaster-related deaths, the authorities started constructing dedicated Multi-Purpose Cyclone Shelters (MPCS) in suitable locations. (Mohammad Faruk, Syeda Atia Ashraf, & Muhammad Ferdaus, An analysis of inclusiveness and accessibility of Cyclone Shelters, Bangladesh, 2018) Several studies were later conducted on the structure, location, capacity, and condition of these shelters.

In some places, the use of schools as relief camps affected regular classes and other educational activities. Later, people were shifted from schools to designated shelters. This issue was more common in areas where shelters were located far from the affected communities.

The location of shelters differs from one area to another. Some shelters are located along main roads, while others are situated in interior areas and on narrow roads. In most places, transportation facilities were available, and the roads were in good condition. Public institutions near the shelters included nurseries, schools, Village Offices, Panchayat Offices, and Municipal Offices. Some shelters were located far from disaster-prone areas such as rivers, canals, and low-lying regions. This created difficulties for vulnerable groups during evacuation.

In several shelters, shelter plans and floor layouts were displayed on the walls. These helped people identify accommodation spaces, sanitation facilities, and other available arrangements during emergencies.

In the Kozhikode district, one shelter was found to be poorly maintained. However, it was sometimes used for Self-Help Group (SHG) meetings and other local official meetings. Most shelters displayed their year of establishment on the walls. Some shelters were clean and properly maintained.

Many shelters were used for community purposes during non-disaster periods. Some functioned as primary schools, school offices, examination halls, gyms, play schools, Buds schools, meeting halls, survey offices, and temporary accommodation spaces for army personnel during election duties and police personnel during festival duties.

The physical structure of shelters differed from one place to another. Even so, most shelters had similar facilities such as halls, kitchens, storage rooms, and toilets.

During disaster situations, separate spaces were arranged for women, children, men, and Persons with Disabilities (PWD). The ground floor was mainly used for elderly people and persons with disabilities for easier access. The second floor was generally arranged for women and children. In some shelters, men stayed in the veranda areas or on the ground floor during emergencies.

The shelter buildings were strong and spacious enough to accommodate disaster-affected people and support other community activities. Flooding was the main problem faced by nearby communities. Coastal populations and other vulnerable groups experienced flooding during the monsoon season because of the overflow of rivers and canals.

During disaster situations, Panchayat members, community volunteers, ASHA workers, and other officials helped with evacuation and transportation activities. They assisted people in moving from affected areas to the shelters. Many hotels and local households provided food

for the affected people during the relief period. The Village Office coordinated relief activities and distributed food items, clothes, and other necessary materials.

Most shelters had basic facilities such as electricity, water supply, beds, cots, and kitchen utensils. Some shelters were also used to store school benches, desks, and office furniture during non-disaster periods. Many shelters were functioning properly with access to electricity and water facilities.

The field assessment found that the utilisation of the shelters varies across locations. While several shelters were actively used during non-disaster periods, others remained inactive. The active shelters served different community purposes, including gymnasiums, community meetings, election camps, digital survey offices, and playschools, which helped ensure the regular use of the buildings.

All the shelters visited had management committees responsible for the administration, supervision, and maintenance of the facilities. The management was generally carried out by the Panchayat President, Panchayat Secretary, Village Officer, School Principal, or Municipal authorities, depending on the location of the shelter. These committees oversee the functioning of the shelters during both disaster and non-disaster periods and coordinate maintenance activities whenever required.

The shelters are located approximately 1 km to 6 km from the coastline, enabling them to serve coastal communities that are vulnerable to cyclone, floods and storm surges. Most of the shelters are situated near schools, village offices, panchayat offices, and other government institutions, making them easily accessible to the local community. All the shelters visited had good road connectivity, which would support evacuation and emergency response during disasters.

The availability of facilities varied among the shelters. Several shelters were equipped with stoves, induction cookers, tables, chairs, buckets, mugs, wipers, and mops, which support

shelter management during emergencies. The majority of the shelters also had beds and cots for accommodating evacuees. However, the condition and maintenance of these facilities differed from one shelter to another. Some shelters were well maintained and fully functional, while others required improvements in maintenance, cleanliness, and the provision of basic services.

Overall, the field assessment indicates that the Multi-Purpose Cyclone Shelters in Kerala play an important role in supporting disaster preparedness and emergency response. At the same time, the use of many shelters for community activities during non-disaster periods contributes to their regular upkeep and strengthens their connection with the local community.

Kathiroor MPCS, Kannur District

1. General Information

The field observation was conducted on 30 January 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Kathiroor Panchayat, Kannur District.

2. Physical Infrastructure

The shelter is a three-storey building with four rooms. It has a small kitchen, toilet facilities on each floor, and a boundary wall surrounding the premises. The building is well maintained and provides adequate space for accommodating people during emergencies.

3. Basic Services

The shelter has drinking water, electricity, and water for cooking, sanitation, and other daily needs. These facilities support the functioning of the shelter during disaster situations.

4. Accessibility

The shelter is connected by a well-maintained tarred road and is located less than 500 metres from the main road, making it easily accessible during emergencies.

5. Functioning During Non-Disaster Periods

During non-disaster periods, the shelter is regularly used as a gymnasium, playschool, and for digital survey activities, ensuring continuous use of the building.

6. Governance and Maintenance

The shelter is managed and supervised by the former Panchayat President and the Village Officer. A management committee oversees the maintenance and functioning of the shelter to ensure its preparedness for emergencies.

Vadakara MPCS, Kozhikode District

1. General Information

The field observation was conducted on 30 January 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Vadakara Municipality, Kozhikode District.

2. Physical Infrastructure

The shelter is a three-storey building with three rooms. Toilet facilities are available on two floors, and the building has a kitchen and a boundary wall surrounding the premises. However, the kitchen is not equipped with the required facilities. The shelter was found to be poorly maintained.

3. Basic Services

At the time of observation, drinking water, running water, electricity, and water for cooking, sanitation, and other basic needs were not available.

4. Accessibility

The shelter is connected by a well-maintained tarred road and is situated approximately one kilometre from the main road.

5. Functioning During Non-Disaster Periods

The shelter is used for Kudumbashree meetings, audit-related activities, and awareness and training programmes conducted by the local authorities.

6. Governance and Maintenance

The shelter is managed by the Municipality in coordination with the Village Officer. The Municipality is responsible for its supervision and maintenance. During the field visit, the shelter was found to have poor maintenance and inadequate cleanliness.

Thazhava MPCS, Kollam District

1. General Information

The field observation was conducted on 21 March 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Thazhava Panchayat, Kollam District.

2. Physical Infrastructure

The shelter is a three-storey building with one room and toilet facilities on each floor. A kitchen facility is also available within the building and a boundary wall surrounding the premises.

3. Basic Services

Drinking water and running water were available at the shelter during the field visit.

4. Accessibility

The shelter is located about 100 metres from the main road and is situated adjacent to the Village Office within the same premises.

5. Functioning During Non-Disaster Periods

The shelter was not being used for any regular activities during the non-disaster period.

6. Governance and Maintenance

The Village Officer and the Panchayat Secretary are responsible for the management, supervision, and maintenance of the shelter.

Cheruthana MPCS, Alappuzha District

1. General Information

The field observation was conducted on 20 May 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Cheruthana Panchayat, Alappuzha District.

2. Physical Infrastructure

The shelter is a three-storey building with one room on each floor. Toilet facilities are available on all floors, and the building has a kitchen facility and a boundary wall surrounding the premises.

3. Basic Services

At the time of data collection, running water and electricity were not available because electrical and plumbing works were in progress.

4. Accessibility

The shelter is located within the school premises and is easily accessible to the local community.

5. Functioning During Non-Disaster Periods

The shelter is used for community meetings, school meetings, election-related activities, and has also been used to accommodate Army personnel during official duty.

6. Governance and Maintenance

The shelter is managed and supervised by the Village Officer and the Panchayat President of Cheruthana Panchayat. They are responsible for the overall functioning and maintenance of the shelter.

Kadappuram MPCS, Thrissur District

1. General Information

The field observation was conducted on 06 March 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Kadappuram Panchayat, Thrissur District.

2. Physical Infrastructure

The shelter is a three-storey building with one room and toilet facilities on each floor. A small kitchen facility is also available and a boundary wall surrounding the premises.

3. Basic Services

Running water was not available during the field visit, while electricity was available.

4. Accessibility

The shelter is situated within the Village Office premises and is located near the main road, providing easy access during emergencies.

5. Functioning During Non-Disaster Periods

The shelter is used for community meetings and other local administrative activities.

6. Governance and Maintenance

The Village Officer and the Panchayat Secretary are responsible for the management, supervision, and maintenance of the shelter.

Azhikode MPCS, Thrissur District

1. General Information

The field observation was conducted on 06 March 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Azhikode Panchayat, Thrissur District.

2. Physical Infrastructure

The shelter is a three-storey building with toilet facilities on all floors and a boundary wall surrounding the premises.

3. Basic Services

Running water was not available at the time of the field visit, whereas electricity was available.

4. Accessibility

The shelter is situated near the Village Office and is easily accessible from the main road.

5. Functioning During Non-Disaster Periods

The shelter was not in use for any community activities during the non-disaster period.

6. Governance and Maintenance

The Village Officer and the Panchayat Secretary manage and supervise the shelter and oversee its maintenance.

Pallipuram MPCS, Ernakulam District

1. General Information

The field observation was conducted on 30 May 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Pallipuram Panchayat, Ernakulam District.

2. Physical Infrastructure

The shelter is a three-storey building with rooms, toilet facilities, and a kitchen facility and a boundary wall surrounding the premises.

3. Basic Services

Running water, drinking water, and electricity were available during the field visit.

4. Accessibility

The shelter is located near the main road, making it easily accessible during emergencies.

5. Functioning During Non-Disaster Periods

The shelter is used for community meetings and has also served as an accommodation centre for Army personnel during election duties.

6. Governance and Maintenance

The Panchayat President and the Village Officer are responsible for the management, supervision, and maintenance of the shelter.

Chalad MPCS, Kannur District

1. General Information

The field observation was conducted on 02 April 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Chalad, Kannur District.

2. Physical Infrastructure

The shelter is a three-storey building with rooms and toilet facilities on each floor and a boundary wall surrounding the premises.

3. Basic Services

Running water and electricity were available during the field visit.

4. Accessibility

The shelter is situated within the school premises and is located about 200 metres from the main road.

5. Functioning During Non-Disaster Periods

The shelter is currently used as school office space and for conducting examinations. During the field visit, preparations were being made to accommodate Army personnel for election duty.

6. Governance and Maintenance

The School Principal, Municipality, and Village Officer jointly manage and supervise the shelter and are responsible for its maintenance.

Kumbala MPCS, Kasaragod District

1. General Information

The field observation was conducted on 02 April 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Kumbala, Kasaragod District.

2. Physical Infrastructure

The shelter is a three-storey building with one room on each floor. Toilet facilities are available on all floors, and the building also has a kitchen and a boundary wall surrounding the premises.

3. Basic Services

Running water and electricity were available during the field visit.

4. Accessibility

The shelter is situated within the school premises and is easily accessible from the main road.

5. Functioning During Non-Disaster Periods

The building is used by the Lower Primary School for regular educational activities during non-disaster periods.

6. Governance and Maintenance

The School Principal and the Village Officer are responsible for the management, supervision, and maintenance of the shelter.

Kudlu MPCS, Kasaragod District

1. General Information

The field observation was conducted on 02 April 2026 at the Multi-Purpose Cyclone Shelter (MPCS) located in Kudlu, Kasaragod District.

2. Physical Infrastructure

The shelter is a three-storey building with one room on each floor. Toilet facilities are available on all floors, and the building has a kitchen facility and a boundary wall surrounding the premises.

3. Basic Services

Running water, drinking water, and electricity were available during the field visit.

4. Accessibility

The shelter is constructed alongside the main road, making it easily accessible during emergencies.

5. Functioning During Non-Disaster Periods

At the time of data collection, the shelter was being used to accommodate Army personnel deployed for election duty.

6. Governance and Maintenance

The Village Officer and the Panchayat authorities are responsible for the management, supervision, and maintenance of the shelter. They oversee the overall functioning of the shelter and ensure its readiness for emergency use.

CHAPTER - V
FINDINGS, SUGGESTIONS & CONCLUSION

5.1 INTRODUCTION:

This chapter presents the findings and recommendations of the study titled "Assessment of the Functioning of Multi-Purpose Cyclone Shelters (MPCS) in Kerala." The study examines the effectiveness of Multi-Purpose Cyclone Shelters in Kerala by analysing the experiences of shelter inmates and the functioning of the shelters during disaster and non-disaster periods. It focuses on disaster preparedness, mitigation, shelter management, maintenance, physical infrastructure, accessibility, basic facilities, essential services, and community activities. The data were collected through a structured questionnaire administered to people who had stayed in Multi-Purpose Cyclone Shelters. A quantitative research approach was adopted to analyse the responses and understand the effectiveness of the shelters in meeting the needs of the community during disasters.

5.2 FINDINGS:

Main Objective 1: To assess the effectiveness of Multi-Purpose Cyclone Shelters in disaster mitigation and preparedness during disaster and non-disaster periods

The study found that the Multi-Purpose Cyclone Shelters (MPCS) are highly effective in reducing disaster risks and ensuring the safety of the affected population during emergencies. Most respondents expressed satisfaction with the overall functioning of the shelters and stated that they received timely shelter, food, drinking water, sanitation facilities, electricity, healthcare support and security during their stay. The shelters were structurally safe and capable of accommodating evacuees during cyclones and heavy rainfall. Apart from disaster response, the shelters were also actively used during non-disaster periods for community meetings, awareness programmes, training programmes, educational activities and other public functions. The active involvement of local authorities, volunteers and community members further strengthened the effectiveness of the shelters in disaster preparedness and management. Most of the Multi-Purpose Cyclone Shelters were equipped with warning dissemination systems for communicating disaster alerts to the community.

Sub Objective 1: To assess the availability and adequacy of basic facilities in Multi-Purpose Cyclone Shelters during disaster periods

The study revealed that the basic facilities provided in the Multi-Purpose Cyclone Shelters were generally adequate during disaster situations. The respondents reported that sufficient drinking water, food, sanitation facilities, electricity, lighting, toilets, cooking facilities and waste management services were available during their stay. Privacy for women, men, girls and boys was properly maintained. Most respondents were satisfied with the cleanliness of the shelter and the arrangements made for food preparation and distribution. Healthcare support, safety measures and security arrangements were also found to be satisfactory. Although the facilities were adequate, a few respondents suggested that some services could be further strengthened to improve comfort during longer periods of stay.

Sub Objective 2: To assess the extent to which MPCS meets the needs of vulnerable groups (differently abled and women)

The findings indicate that the Multi-Purpose Cyclone Shelters have made considerable efforts to address the needs of vulnerable groups. Most respondents stated that women, children, elderly persons and persons with disabilities received proper care, safety and support during their stay. Ramps, accessible toilets and other facilities for persons with disabilities were available in most shelters. Separate spaces and privacy arrangements for women and girls contributed to their safety and dignity. Healthcare support was also provided whenever required. However, some respondents felt that additional facilities and specialised support for persons with severe disabilities and elderly people could further improve the quality of services.

Sub Objective 3: To assess the extent to which the community utilises MPCS during non-disaster periods

The study found that the Multi-Purpose Cyclone Shelters are not limited to disaster response but also serve as important community assets during normal periods. The shelters are regularly used for awareness programmes, disaster preparedness training, meetings, educational activities, health camps, community gatherings and government programmes. These activities help maintain the shelter buildings while improving community awareness and preparedness.

The continuous use of the shelters also increases public familiarity with the facilities, making evacuation easier during disasters.

Sub Objective 4: To evaluate the functioning of institutional mechanisms of MPCS

The study shows that the institutional mechanisms supporting the Multi-Purpose Cyclone Shelters are functioning effectively. The local self-government institutions, shelter management committees, government departments, volunteers and disaster management agencies worked together to ensure the smooth functioning of the shelters. Meetings were regularly conducted, maintenance activities were carried out and necessary arrangements were made before disaster situations. The respondents expressed confidence in the shelter management system and appreciated the support provided by officials and volunteers during emergencies. Community participation also contributed to the effective functioning of the shelters.

5.3 SUGGESTIONS

Regular maintenance of shelter buildings and facilities should be carried out to ensure that they remain fully functional throughout the year. Periodic disaster preparedness programmes, mock drills and awareness campaigns should be conducted to improve community preparedness.

Adequate emergency supplies, communication equipment and rescue materials should always be available in the shelters. Strong coordination among local self-government institutions, disaster management authorities, volunteers and community members should be maintained to improve disaster response and preparedness.

Regular inspection and maintenance of water supply, toilets, kitchens and sanitation facilities should be carried out before every disaster season. Additional emergency stocks of food, drinking water, medicines and hygiene materials should be stored in the shelters. Separate sanitation facilities and adequate privacy arrangements should continue to be maintained for women, children and families. Backup power supply and proper waste disposal systems should also be strengthened to ensure uninterrupted services during emergencies.

The shelters should continue to strengthen inclusive facilities by improving accessibility for persons with disabilities and elderly individuals. More wheelchairs, handrails, accessible toilets and assistive devices should be made available. Special care teams should be formed to support vulnerable groups during emergencies. Regular training should be provided to shelter staff and volunteers on disability inclusion, gender-sensitive approaches and child-friendly practices to ensure that the needs of all shelter occupants are properly addressed.

Community utilisation of the shelters should be further encouraged through regular educational, social and disaster preparedness activities. More training programmes, awareness campaigns, mock drills and community meetings should be organised throughout the year. Schools, local organisations and community groups should be encouraged to use the shelters for public welfare programmes. This will improve public participation and ensure that the shelters remain active, functional and well maintained.

The coordination among government departments, local self-government institutions and disaster management agencies should be strengthened further through regular review meetings and joint planning. Shelter management committees should continue conducting periodic inspections and maintenance activities. More training should be provided for officials, volunteers and community representatives to improve disaster management skills. Adequate financial support should also be ensured for the regular maintenance and upgrading of shelter facilities.

5.4 CONCLUSION

The present study, "**Assessment of the Functioning of Multi-Purpose Cyclone Shelters in Kerala**" was undertaken to assess how effectively Multi-Purpose Cyclone Shelters contribute to disaster mitigation, preparedness, and community safety during both disaster and non-disaster periods. The findings show that MPCs have become an important component of disaster management in coastal areas by providing a safe evacuation space and supporting community preparedness. Beyond their role during emergencies, these shelters also serve as valuable community assets by being used for social, educational, and public welfare activities throughout the year.

The study found that the basic facilities available in the shelters were generally adequate to meet the immediate needs of people during disaster situations. Essential services such as safe drinking water, sanitation facilities, electricity, cooking arrangements, food distribution, sleeping space, and cleanliness were available in most shelters. The respondents expressed satisfaction with the maintenance of these facilities and appreciated the efforts of the local authorities and shelter management committees in ensuring that the shelters remained functional. Although the overall condition of the shelters was satisfactory, the study also identified the need for continuous maintenance, regular inspections, and timely repair of infrastructure to maintain the same standard of preparedness.

Another important finding of the study is that the shelters have made considerable efforts to address the needs of vulnerable groups. Women, children, elderly persons, and persons with disabilities were provided with basic safety, privacy, and necessary support during their stay in the shelters. Separate sanitation facilities, adequate privacy arrangements, ramps, and other accessible features were available in many of the shelters studied. However, the study also indicates that further improvements are required to make every shelter fully inclusive and accessible. Additional facilities for persons with disabilities, better support systems for elderly people, and child-friendly spaces would further improve the quality of shelter services.

The study also highlights that Multi-Purpose Cyclone Shelters are actively utilised during non-disaster periods. Many shelters function as centres for community meetings, awareness programmes, disaster preparedness training, educational activities, health camps, and other public programmes. This regular use helps keep the shelters functional, strengthens community participation, and improves public familiarity with the facilities. The continued use of these shelters throughout the year also promotes disaster awareness and encourages people to respond more effectively during emergencies.

The findings further show that the institutional mechanisms responsible for managing the shelters are functioning effectively. Panchayat representatives, local government officials, school authorities, disaster management committees, volunteers, and community members

work together to manage the shelters before, during, and after disasters. Regular meetings, maintenance activities, coordination among departments, and community participation contribute to the effective functioning of the shelters. The active involvement of local institutions has strengthened preparedness and ensured timely support during emergencies. At the same time, the study suggests that continuous capacity-building programmes, regular mock drills, and better coordination among stakeholders can further improve institutional preparedness.

Overall, the study concludes that Multi-Purpose Cyclone Shelters are effective in reducing disaster risk and protecting vulnerable populations during emergencies. They have significantly improved community preparedness by providing safe shelter, essential facilities, and organised institutional support. Their usefulness extends beyond disaster response, as they also serve as important community centres that strengthen social participation and disaster awareness throughout the year.

However, disaster preparedness is a continuous process, and the effectiveness of these shelters depends on regular maintenance, periodic infrastructure improvements, inclusive planning, community participation, and strong institutional coordination. Continuous investment in infrastructure, accessibility, staff training, and community awareness will ensure that these shelters remain capable of meeting future disaster challenges. Strengthening these areas will further enhance the role of Multi-Purpose Cyclone Shelters as reliable and sustainable disaster management resources, contributing to safer, more resilient, and better-prepared communities in disaster-prone regions.

The shelter assessment provided a comprehensive understanding of the physical infrastructure, availability of basic facilities, essential services, sanitation, accessibility, and overall functioning of the Multi-Purpose Cyclone Shelters in Kerala. The assessment showed that, although the quality and maintenance of facilities varied across shelters, most were structurally suitable to provide safe accommodation during disasters. It also highlighted the accessibility of the shelters for coastal communities, their utilisation during both disaster and non-disaster periods, and the range of community activities conducted throughout the year.

The findings further emphasise that effective shelter management, regular maintenance, and the active involvement of local authorities and management committees are essential for ensuring the long-term sustainability and preparedness of the shelters. Overall, the study provides a clear understanding of the functioning, management, and sustainability of Multi-Purpose Cyclone Shelters in Kerala and highlights their important role in strengthening disaster preparedness, emergency response, and community resilience.

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ANNEXURES

DEMOGRAPHIC PROFILE:

1. Name:

2. Age:

3. Gender:

4. Education:

5. Occupation:

(a) Primary livelihood:

(b) Secondary livelihood:

6. Household size: ____

Details of people in the household: 1.

2.

3.

4.

5.

6.

To assess the availability and adequacy of basic facilities in Multi-Purpose Cyclone Shelters during disaster periods.

7. How many times have you stayed in an MPCS during the past 3 years?

☐ Once

☐ 2–3 times

☐ More than 3 times

If more than 3 times, specify:

8. Duration of stay during your last stay in the shelter

☐ Less than 24 hours

☐ 1–3 days

☐ More than 3 days

If more than 3 days, specify:

9. How did you reach the MPCS during the disaster?

☐ Self-evacuation

☐ Assisted by disaster response teams

☐ Assisted by local authorities

☐ Assisted by others in the community

☐ Others

Explain, how? _____

10. Before reaching the MPCS, how did you receive information about evacuation or the disaster situation?

☐ Through local authorities (Panchayat / Municipality)

☐ Through disaster response teams or volunteers

☐ Through media (TV/radio/newspapers)

☐ Through mobile alerts / social media

☐ Through neighbours or community members

☐ I did not receive any prior information

☐ Other (please specify): _____

11. Overall effectiveness of MPCS in protecting lives during disasters:

☐ Very effective

☐ Effective

☐ Less effective

☐ Not effective

12. Would you prefer to use the same MPCS in future disasters?

☐ Yes

☐ No

☐ Not sure

13. How would you rate the structural safety of the MPCS during the disaster period (in terms of resistance to floods, cyclones, heavy rainfall, and strong winds)?

☐ Very strong and safe

☐ Strong

☐ Weak

☐ Very weak

If weak, (please specify): _____

14. Your level of satisfaction with MPCS facilities and services

☐ Very satisfied

☐ Satisfied

☐ Dissatisfied

☐ Very dissatisfied

15. Type of disaster during which you stayed in the MPCS

☐ Flood

☐ Cyclone

☐ Heavy rainfall

☐ Storm surge

☐ COVID:19

☐ Others:

16. How would you rate the safety and security inside the shelter?

☐ Very safe

☐ Safe

☐ Unsafe

☐ Very unsafe

17. Adequacy of shelter capacity to accommodate all evacuees?

☐ Sufficient

☐ Insufficient

18. If sufficient,

☐ Sufficient number of beds for everyone

☐ Sufficient number of rooms/sleeping areas

☐ Separate spaces for families

☐ Sufficient toilets for all

☐ Adequate lighting in shelter areas

☐ Adequate ventilation in rooms

☐ Space for movement/no overcrowding

☐ Availability of other basic facilities (water, electricity, sanitation)

☐ Others (please specify): _____

19. If insufficient:

- ☐ Too many people in the shelter
- ☐ Not enough beds
- ☐ Not enough rooms/sleeping areas
- ☐ Insufficient toilets/sanitation facilities
- ☐ Poor ventilation
- ☐ Poor lighting
- ☐ Lack of water/electricity supply
- ☐ Other (please specify): _____

20. During your stay in the shelter, did you get enough drinking water?

- ☐ Yes
- ☐ No
- ☐ Sometimes
- ☐ Other (please specify): _____

21. Did you get enough water for other purposes like cooking, washing, and bathing?

- ☐ Yes
- ☐ No

22. Were there enough toilets for all the inmates in the shelter?

- ☐ Yes
- ☐ No

23. If yes, was there running water inside the toilets?

- ☐ Yes
- ☐ No

24. If no, from where did you have to bring water into the toilets? Specify:

- ☐ Nearby river
- ☐ Public tap
- ☐ Neighbour's
- ☐ Water tanker
- ☐ Stored tank water
- ☐ Panchayat supply
- ☐ Other (please specify): _____

25. If adequate, which aspects made the toilets adequate?

- ☐ Separate toilets exclusively for men and women
- ☐ Lockable doors for privacy
- ☐ Cleanliness is maintained regularly
- ☐ Proper ventilation
- ☐ Functional sanitation facilities
- ☐ Adequate water supply / functional pipes
- ☐ Electricity/lighting available
- ☐ Mugs/buckets available for use
- ☐ Adequate number of toilets for the users
- ☐ Easily accessible location
- ☐ Other (please specify): _____

26. If inadequate, which aspects were lacking?

- ☐ No separate toilets for men and women

- ☐ Doors are not lockable
- ☐ Poor cleanliness/hygiene
- ☐ Poor ventilation
- ☐ non-functional sanitation facilities
- ☐ Water supply/pipes insufficient
- ☐ Electricity/lighting unavailable
- ☐ Mugs/buckets not provided
- ☐ Insufficient number of toilets
- ☐ Inaccessible location
- ☐ Other (please specify): _____

27. Did you face any conflicts with other inmates during your stay?

- ☐ Yes
- ☐ No

28. Are cooking facilities available in the kitchen?

- ☐ Yes
- ☐ No

29. If yes, were the cooking facilities adequate?

- ☐ Availability of stove
- ☐ Availability of cooking fuel (LPG/firewood)
- ☐ Availability of cooking ingredients (rice, pulses, oil, spices, etc.)
- ☐ Sufficient cooking utensils
- ☐ Adequate cooking space

- ☐ Proper ventilation
- ☐ Safe cooking area (fire safety measures)
- ☐ Clean water availability
- ☐ Proper waste disposal facility
- ☐ Adequate lighting in the cooking area
- ☐ Other (please specify): _____

30. Was food provided in the shelter during your stay?

- ☐ Yes
- ☐ No

31. If yes, was the food distributed regularly?

- ☐ Yes
- ☐ No

32. Was the food distributed on time for every meal?

- ☐ Yes
- ☐ No

33. Was adequate hygiene maintained during food distribution?

- ☐ Yes
- ☐ No

34. Was the sleeping space adequate for each family member?

- ☐ Yes
- ☐ No

35. Were medical facilities available during your stay in the shelter?

☐ Yes

☐ No

36. Were first-aid facilities available during your stay in the shelter?

☐ Yes

☐ No

To assess the extent to which MPCCS meets the needs of vulnerable groups (differently abled & women).

37. During your stay, were accessible toilets available in the shelter for persons with disabilities?

☐ Yes

☐ No

38. During your stay, was privacy for women, girls and men adequately provided in the shelter?

☐ Adequate

☐ Inadequate

39. During your stay in the shelter, were ramps available in the shelter for persons with disabilities?

☐ Yes

☐ No

40. Were the ramps sufficient and convenient for persons with disabilities persons?

☐ Yes

☐ Partially

☐ No

41. Were the accessible toilets sufficient and convenient for persons with disabilities?

- ☐ Yes
- ☐ Partially
- ☐ No

42. If privacy was adequate, which aspects made it adequate?

- ☐ Separate sleeping areas for men, girls, children's and women
- ☐ Separate changing areas
- ☐ Partitioned spaces in shared rooms
- ☐ Lockable doors in toilets/bathrooms
- ☐ Adequate screening or curtains
- ☐ Adequate supervision by staff to ensure privacy
- ☐ Sufficient distance between male and female areas
- ☐ Others: _____

43. If privacy was inadequate, which aspects were lacking?

- ☐ No separate sleeping areas for men and women
- ☐ No separate changing areas
- ☐ Shared rooms without partitions
- ☐ Toilets/bathrooms not lockable
- ☐ Lack of curtains or screening
- ☐ Insufficient supervision by staff
- ☐ Male and female areas are too close
- ☐ Other (please specify): _____

44. During your stay, were separate toilets for women and men adequately provided in the shelter?

☐ Adequate

☐ Inadequate

To assess the extent to which the community utilises MPCs during non-disaster periods.

45. Are MPCs used for community activities during non-disaster periods?

☐ Yes

☐ No

☐ Not aware

46. Distance of the MPCs from your residence

☐ Less than 1 km

☐ 1–3 km

☐ 3–5 km

☐ More than 5 km

47. Ease of access to the MPCs during the disaster

☐ Very easy

☐ Easy

☐ Difficult

☐ Very difficult

Please specify: _____

48. If the shelter did not have sufficient basic facilities, did you experience conflicts with other inmates?

☐ Yes

☐ No

To evaluate the functioning of institutional mechanisms of MPCS.

49. Which of the following functions of the Shelter Management Committee and Disaster Response Teams were effectively carried out during your stay in the shelter?

- ☐ Registration of inmates and proper allocation of space
- ☐ Arrangement and distribution of accommodation, food and safe drinking water
- ☐ Maintenance of cleanliness, sanitation, and waste disposal
- ☐ Provision of basic health care and psychosocial support
- ☐ Ensuring safety and special care for women, children, pregnant women, elderly, and persons with disabilities
- ☐ Communication of official information, instructions, and guidance to inmates
- ☐ Protection and maintenance of shelter buildings, facilities, and equipment
- ☐ Evacuation and rescue assistance for affected persons
- ☐ Provision of first aid and emergency medical support
- ☐ Ensuring safety, security, and crowd management inside the shelter
- ☐ Monitoring disaster conditions and providing timely warnings or updates
- ☐ Assistance in managing essential services (water, electricity, lighting, generators)
- ☐ Support in distribution of relief materials and logistics
- ☐ Coordination with local authorities and shelter management committee
- ☐ No specific support received
- ☐ Other (please specify): _____

50. While staying in the MPCS, did you cooperate with staff and officials to make their duties easier?

- ☐ Drinking water distribution and management
- ☐ Cleaning and sanitation activities
- ☐ Food distribution and serving
- ☐ Crowd management and queue maintenance
- ☐ Helping elderly, children, and persons with disabilities
- ☐ Providing information or communication support
- ☐ Safety and security–related assistance
- ☐ Did not cooperate in any activity
- ☐ Others (please specify): _____

51. How would you rate the overall level of support you received from shelter management and disaster response teams during your stay?

- ☐ Very satisfactory
- ☐ Satisfactory
- ☐ Unsatisfactory
- ☐ Very unsatisfactory

52. During your stay at the shelter, did you have any grievances?

- ☐ Yes
- ☐ No

53. If yes, did you share your grievances with the concerned authorities?

- ☐ Yes
- ☐ No

54. Suggestions for improvement of MPCS:

In which of the following areas do you feel improvements are required in the MPCS?

- ☐ Strengthening of the structural safety of the building
- ☐ Improvement of cleanliness and sanitation facilities
- ☐ Better provision of safe drinking water
- ☐ Improvement of food supply/community kitchen facilities
- ☐ Better space management and privacy for families
- ☐ Improved facilities for women and children
- ☐ Improved facilities for elderly persons and persons with disabilities
- ☐ Strengthening of health care / first-aid services
- ☐ Better safety and security arrangements
- ☐ Provision of psychological support / counselling services
- ☐ Improved disaster warning and information systems
- ☐ Reliable emergency power supply (generator/solar)

55. Was there any incidence of alcohol or substance use during the shelter stay? Did you observe alcohol or other substance use among men or youth during the MPCS stay?

- ☐ Yes
- ☐ No

56. If yes, how was alcohol or substance use controlled during the stay in the Multi-Purpose Cyclone Shelter (MPCS)?

- ☐ Verbal warning by shelter authorities
- ☐ Confiscation of alcohol/substances
- ☐ Monitoring by volunteers/police

- ☐ Counselling or awareness sessions
- ☐ Restriction of entry for intoxicated persons
- ☐ No control measures taken
- ☐ Others (please specify): _____

MULTI - PURPOSE CYCLONE SHELTERS (MPCS): OBSERVATION CHECKLIST

General Information:

District: _____

Panchayat / Municipality: _____

Date of observation: _____

Cleanliness and Maintenance

1. Cleanliness inside the MPCS

- ☐ Very clean
- ☐ Moderately clean
- ☐ Not clean
- ☐ Very poor condition

2. Cleanliness outside the MPCS

- ☐ Very clean
- ☐ Moderately clean
- ☐ Not clean
- ☐ Very poor condition

3. Overall maintenance of the MPCS building

- ☐ Well maintained
- ☐ Moderately maintained
- ☐ Poorly maintained

4. Surrounding area condition

☐ Clean and well maintained

☐ Partially maintained

☐ Poorly maintained

Physical Infrastructure

5. Total area of the MPCS (approx.)

☐ Small ☐ Medium ☐ Large

(If known, specify in sq. ft./sq. m.): _____

6. Number of rooms available

Total rooms: _____

Rooms usable for sheltering: _____

7. Toilets

Number of toilets for women: _____

Number of toilets for men: _____

Condition of toilets:

☐ Functional ☐ Partially functional ☐ Not functional

8. Beds

Number of beds available: _____

Condition of beds:

☐ Good ☐ Average ☐ Poor ☐ Not available

Kitchen and Food Facilities

9. Kitchen facility available

☐ Yes ☐ No

If yes, observe availability of:

- ☐ Stove
- ☐ Cooking fuel (LPG/firewood)
- ☐ Cooking utensils
- ☐ Storage space
- ☐ Proper ventilation
- ☐ Safe cooking area

Utilities and Basic Services

10. Electricity supply

- ☐ Available and functional
- ☐ Available but irregular
- ☐ Not available

11. Drinking water availability

- ☐ Adequate
- ☐ Limited
- ☐ Not available

12. Water availability for basic facilities (toilets, cleaning, washing)

- ☐ Adequate
- ☐ Limited
- ☐ Not available

Accessibility and Surroundings

13. Boundary wall

- ☐ Present and intact

☐ Present but damaged

☐ Not present

14. Access road to MPCS

☐ Well maintained

☐ Partially maintained

☐ Poor condition

15. Type of access road

☐ Tarred Road

☐ Concrete Road

☐ Mud Road

16. Distance from MPCS to main road

☐ Less than 500 meters

☐ 500 m – 1 km

☐ More than 1 km

Nearby Important Institutions

☐ Primary Health Centre (PHC)

☐ Community Health Centre (CHC)

☐ Village office

☐ Panchayat office

☐ School

☐ Anganwadi

☐ Grocery shop

☐ Medical shop

☐ Others (specify): _____

Functions and Usage

17. Are there any active functions or regular uses of the MPCS during non-disaster periods?

☐ Community meetings

☐ Training / awareness programmes

☐ Storage purpose

☐ Educational activities

☐ No regular use observed

Management and Administration

18. Management committee present

☐ Yes ☐ No

19. Composition of management committee (observed / informed)

☐ Panchayat representatives

☐ Disaster Management officials

☐ Community representatives

☐ Volunteers

☐ Others: _____

20. Who is the overall in charge of the MPCS?

☐ Panchayat Secretary

☐ Village Officer

☐ Disaster Management Official

☐ Shelter Management Committee Head

☐ Not clearly identified

Other: _____

21. Is an in-charge person clearly assigned for supervision of the MPCS?

☐ Yes

☐ No

22. Does the in-charge person actively supervise the MPCS (maintenance, cleanliness)?

☐ Yes, regularly

☐ Occasionally

☐ No supervision observed