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CIVIL DEFENCE VOLUNTEERS IN KERALA:

AN EVALUATION OF PROGRAMME EFFECTIVENESS AND COMMUNITY PARTICIPATION

Master of Social Work Degree Examination

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**CIVIL DEFENCE VOLUNTEERS IN KERALA:
AN EVALUATION OF PROGRAMME
EFFECTIVENESS AND COMMUNITY
PARTICIPATION**

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ABSTRACT

The Civil Defence Volunteer Programme has become an important component of community-based disaster management in Kerala, contributing to disaster preparedness through trained volunteers who support emergency response and strengthen community resilience. Despite the programme's expanding role, limited empirical evidence exists on its effectiveness in promoting community participation and disaster preparedness within the Kerala context. The present study evaluated the effectiveness of the Civil Defence Volunteer Programme in Thiruvananthapuram district, examining programme implementation and training, the extent of community participation, the factors influencing volunteer participation and performance, and volunteers' operational readiness, drawing on Community Resilience Theory as an interpretive framework. A quantitative evaluative research design was adopted. Using simple random sampling through the lottery method, 89 Civil Defence Volunteers were selected from a sampling frame of 200 trained volunteers registered with the District Fire and Rescue Services Office, Thiruvananthapuram, and data were analysed using descriptive and inferential statistical techniques. The study found a committed volunteer base marked by strong civic responsibility, altruistic motivation, and high operational readiness, sustaining community participation through active awareness creation and close engagement with residents. Collaboration with formal community organisations remained comparatively limited, and programme implementation varied across operational settings, reflecting gaps in institutional consistency. Together, these findings indicate that the programme's human and social capacities are well developed, while its institutional capacities require further strengthening suggesting that enhancing the programme's overall effectiveness depends less on sustaining volunteer commitment, which is already strong, and more on reinforcing institutional support and formal community partnerships. The study contributes empirical evidence to disaster management and social work practice, highlighting how volunteer-based initiatives can strengthen community resilience and support more participatory, sustainable disaster preparedness in Kerala.

Keywords: Civil Defence Volunteers, Community-Based Disaster Management, Community Participation, Community Resilience Theory, Operational Readiness, Volunteer Motivation

CHAPTER I

INTRODUCTION

CHAPTER I : INTRODUCTION

1.1 Introduction

Disaster management has emerged as a critical domain in contemporary governance, particularly in regions that are highly vulnerable to both natural and human-induced hazards. The increasing frequency and intensity of disasters have shifted the focus from reactive response mechanisms to proactive preparedness, mitigation, and resilience-building approaches. In this context, organized community-based systems play a vital role in enhancing disaster preparedness, response efficiency, and recovery processes. Effective disaster management is no longer confined to institutional frameworks alone but increasingly depends on the active participation of trained citizen volunteers at the grassroots level (Norris et al., 2008).

Civil Defence in India is a statutory organization established under the *Civil Defence Act of 1968*, with the primary objective of safeguarding civilians and ensuring preparedness during emergencies in both wartime and peacetime situations (Government of India, 1968). Over time, the role of Civil Defence has evolved significantly from a protection-oriented mechanism to a broader system that includes disaster preparedness, public awareness, and community mobilization. This transformation reflects the growing recognition that disaster resilience requires decentralized and community-driven approaches.

Expert committees such as the High-Power Committee (2001) and subsequent expert groups, including the committee chaired by NDMA member Shri K.M. Singh, emphasized the need to strengthen disaster management through community-based volunteer systems. These recommendations highlighted the importance of integrating Civil Defence with Panchayati Raj Institutions and Urban Local Bodies to promote local-level preparedness and participatory governance (High Power Committee Report, 2006). Such a shift underscores the importance of volunteers as key actors in bridging the gap between institutional disaster response mechanisms and community-level action.

In Kerala, the importance of Civil Defence gained prominence following the devastating floods of 2018, which exposed the vulnerabilities of the state while simultaneously demonstrating the potential of community participation in disaster response. The active involvement of local volunteers in rescue and relief operations highlighted the need for a structured and institutionalized volunteer force. In response, Kerala established a formal

Civil Defence volunteer system under the Kerala State Disaster Management Authority (KSDMA) in 2019, integrating it with the Fire and Rescue Services to enhance coordination and operational efficiency (KSDMA, 2019).

Since its establishment, the Civil Defence programme in Kerala has expanded considerably, with more than 6,200 trained volunteers organized across 124 fire and rescue stations. The programme envisions transforming approximately one percent of the population into trained first responders through systematic training at district, state, and fire station levels (KSDMA Annual Report, 2023). Civil Defence volunteers play a crucial role in disaster response activities, including rescue operations, logistics management, and community support. Notably, during the Brahmapuram fire in 2023, nearly 450 volunteers from 12 districts participated in response operations under challenging conditions, demonstrating a high level of commitment and service orientation (KSDMA, 2023).

Despite these developments, Civil Defence volunteers operate without financial remuneration, often sacrificing personal time, income, and comfort to contribute to disaster management efforts. Their mobilization is typically coordinated through decentralized communication systems such as regional WhatsApp groups, and their logistical arrangements are often facilitated through public infrastructure such as schools and community buildings. Their contributions extend beyond emergency response to include supporting administrative functions, distributing essential supplies, and engaging with affected communities.

However, while the programme has expanded in scale and operational visibility, there remains a lack of systematic empirical evaluation regarding its effectiveness in achieving its intended objectives. There is limited research assessing whether the programme effectively enhances disaster preparedness, strengthens volunteer performance, and promotes meaningful community participation. This gap necessitates a structured and evidence-based evaluation of the Civil Defence programme, particularly in the context of Kerala.

1.2 Statement of the Problem

Kerala is one of the most disaster-prone states in India, experiencing recurrent floods, landslides, coastal erosion, cyclones, and other climate-induced hazards. The devastating

floods of 2018 and 2019 exposed significant challenges in disaster preparedness, emergency response, and community resilience while simultaneously demonstrating the crucial role of local communities and volunteers in disaster management (Government of Kerala, 2019; Joseph & James, 2019). In recent years, there has been a growing recognition that effective disaster management requires not only institutional preparedness but also active community participation and local capacity building. Consequently, community-based disaster management approaches have gained prominence as sustainable mechanisms for reducing disaster risks and strengthening resilience (Twigg, 2015).

In this context, the Civil Defence Volunteer Programme has emerged as an important initiative aimed at enhancing community preparedness and supporting disaster management efforts at the grassroots level. Following the strengthening of Kerala's disaster management framework after the 2018 floods, Civil Defence volunteers have been increasingly mobilized to assist in awareness generation, disaster preparedness activities, emergency response, rescue operations, relief distribution, and community support initiatives (Kerala State Disaster Management Authority [KSDMA], 2024). Through structured training and volunteer engagement, the programme seeks to create a skilled and community-oriented volunteer force capable of supporting both formal disaster management agencies and local communities.

Despite the rapid expansion and operational visibility of the programme, there remains limited empirical evidence regarding its effectiveness in achieving its intended objectives. Existing studies and policy reports largely focus on disaster response experiences, institutional frameworks, and volunteer mobilization, while systematic evaluations of programme effectiveness, volunteer preparedness, and community participation remain scarce (George & Thomas, 2022; Kumar & Pillai, 2023). Although the programme has successfully recruited and trained a substantial number of volunteers, questions remain regarding the adequacy of training, the extent of volunteer preparedness, the quality of community engagement facilitated through programme activities, and the effectiveness of institutional coordination mechanisms.

Furthermore, the sustainability and effectiveness of volunteer-based disaster management programmes are influenced by several factors, including resource availability, organizational support, recognition mechanisms, role clarity, volunteer motivation, and coordination among stakeholders (Clary et al., 1998; Mishra & Sharma, 2023). Challenges related to these dimensions may affect volunteer participation, programme performance, and long-term

sustainability. Without systematic evaluation, such issues may remain inadequately understood and insufficiently addressed, thereby limiting the potential contribution of Civil Defence volunteers to disaster preparedness and community resilience.

Additionally, Kerala's disaster management system increasingly emphasizes community participation as a key component of disaster risk reduction. However, there is limited understanding of how effectively Civil Defence volunteers facilitate community involvement, promote disaster awareness, and strengthen local preparedness capacities. The extent to which the programme contributes to building resilient communities through sustained participation and engagement has not been adequately examined from the perspective of the volunteers themselves.

Against this backdrop, the present study seeks to evaluate the effectiveness of the Civil Defence Volunteer Programme in Kerala, with particular emphasis on programme implementation, community participation, volunteer performance, and operational readiness. The study aims to assess how effectively the programme mobilizes and supports volunteers, facilitates community engagement, and contributes to disaster preparedness at the grassroots level. It also seeks to identify factors influencing volunteer participation and performance, as well as challenges affecting programme effectiveness. Through a systematic evaluation, the study intends to generate evidence-based insights that can contribute to strengthening Civil Defence as a resilient, community-driven, and sustainable disaster preparedness system suited to Kerala's unique socio-environmental context.

1.3 Background of the Study

The evolution of disaster management in India reflects a gradual shift from a reactive, relief-oriented approach to a proactive and integrated system emphasizing preparedness, mitigation, and community participation. Civil Defence, initially established as a wartime protection mechanism under the Civil Defence Act of 1968, has expanded its scope to address the challenges posed by natural and human-induced disasters (Government of India, 1968).

The recommendations of the High Power Committee (2001) and subsequent expert groups emphasized the importance of decentralizing disaster management and strengthening local capacities through volunteer-based systems. These recommendations led to the integration

of Civil Defence with broader disaster management frameworks, including the National Disaster Management Authority (NDMA) and state-level disaster management authorities.

Kerala, being highly vulnerable to disasters such as floods, landslides, and coastal hazards, has adopted a proactive approach to disaster management. The 2018 floods marked a turning point in the state's disaster management strategy, highlighting both systemic gaps and the potential of community participation. In response, the Kerala government strengthened its Civil Defence framework by formalizing a volunteer-based system under KSDMA in 2019.

The Civil Defence volunteer system in Kerala operates through a decentralized structure linked to Fire and Rescue Services, with volunteers trained at multiple levels. The programme emphasizes capacity building, public awareness, and community engagement, aligning with the broader goals of disaster risk reduction and resilience building.

Despite its rapid expansion and increasing operational role, there is limited research examining the programme's effectiveness in achieving its intended outcomes. Most existing studies focus on policy frameworks or disaster response narratives, with insufficient attention to programme evaluation, volunteer dynamics, and community participation. This study is therefore undertaken to address this gap and provide a systematic assessment of the Civil Defence programme in Kerala.

1.4 Relevance and Significance of the Study

The present study holds significant academic and practical relevance in the field of disaster management and social work. It contributes to the growing body of knowledge on community-based disaster management by providing empirical insights into the functioning and effectiveness of Civil Defence volunteer programmes.

The study is relevant in assessing the adequacy of training provided to Civil Defence volunteers at various administrative levels and evaluating their preparedness for diverse disaster scenarios.

It examines the effectiveness of volunteer mobilization and coordination during major disaster events and routine emergency situations, thereby providing an understanding of operational efficiency.

Further, the study explores the level and quality of community participation facilitated through the Civil Defence programme, highlighting its role in promoting community engagement and awareness. It also identifies gaps in resources, institutional support, and logistical arrangements that may affect volunteer performance and programme sustainability.

By analysing the impact of the programme on building sustainable disaster preparedness and community resilience, the study provides valuable insights for strengthening disaster management systems at the grassroots level. The findings of the study are expected to inform policy formulation, improve programme implementation, and enhance volunteer support mechanisms.

Ultimately, the study contributes to the development of Civil Defence as a sustainable, community-driven disaster management model, capable of addressing the unique socioenvironmental challenges of Kerala.

1.5 Chapterization

The study is organized into five chapters, each addressing a specific aspect of the research.

Chapter I: Introduction presents the overall context of the study, including the introduction, statement of the problem, background, and significance of the study.

Chapter II: Review of Literature examines existing literature related to Civil Defence, disaster management, volunteerism, and community participation in both international and Indian contexts. It also identifies research gaps and presents the theoretical framework guiding the study.

Chapter III: Research Methodology outlines the research design, objectives, sampling techniques, tools of data collection, pilot study, methods of data analysis, and limitations of the study.

Chapter IV: Data Analysis and Interpretation presents the analysis of data collected from the field, along with interpretation and discussion of findings in relation to the objectives and existing literature.

Chapter V: Findings, Suggestions, and Conclusion summarizes the major findings of the study, provides recommendations for policy and practice, and concludes the study. The chapter is followed by references, appendices, and data collection tools.

1.6 Chapter Summary

This chapter introduced the background and rationale of the study on Civil Defence Volunteers in Kerala, with particular reference to programme effectiveness and community participation. It highlighted the increasing importance of community-based disaster management in the context of Kerala's vulnerability to floods, landslides, coastal erosion, and other climate-related hazards. The chapter discussed the evolution of the Civil Defence Volunteer Programme and identified the need for systematic evaluation of its effectiveness in enhancing community participation and disaster preparedness.

The statement of the problem, significance of the study, objectives, and key concepts were presented to provide conceptual clarity and direction for the research. The chapter also outlined the scope and relevance of evaluating Civil Defence as a community-based disaster preparedness mechanism. By identifying existing knowledge gaps and the need for empirical evidence regarding programme outcomes, the chapter established the foundation for the present investigation.

The next chapter presents a comprehensive review of literature related to Civil Defence systems, community participation, volunteerism in disaster management, and the theoretical perspectives that guide the study.

CHAPTER II

REVIEW OF LITERATURE

CHAPTER II : REVIEW OF LITERATURE

2.1 Introduction

A review of literature is a critical component of programme evaluation research, as it situates the present study within existing theoretical, policy, and empirical contexts. For studies focusing on disaster management and volunteer-based interventions, reviewing prior literature helps in understanding how institutional frameworks, community participation, and volunteer engagement have evolved and how they are assessed in different contexts. In the case of Civil Defence in India, and particularly in Kerala, literature provides insights into the transition of Civil Defence from a war-centric protective mechanism to a community-oriented disaster preparedness system.

The present review integrates literature related to civil defence systems, disaster management policies, community participation in emergencies, and volunteerism in disaster contexts. Given the interdisciplinary nature of the study, the literature is organised thematically. Accordingly, this chapter is structured under three major themes: (1) Civil Defence systems and policy frameworks, (2) Community participation in emergency preparedness, and (3) Volunteerism and citizen involvement in disaster management. A separate section discusses the Keralaspecific context, followed by identified research gaps and a summary that justifies the need for the present study.

2.2 Review of Literature

2.2.1 Civil Defence Systems and Policy Frameworks

Civil Defence in India derives its statutory legitimacy from the Civil Defence Act, 1968, which defines civil defence as a set of non-combat measures aimed at protecting civilians, property, and essential services during emergencies and hostile attacks (1968). Initially conceptualised within a wartime security framework, the scope of Civil Defence remained largely limited to protection against external threats. However, with the increasing incidence

of natural and human-made disasters, the functional orientation of Civil Defence gradually expanded.

A significant policy shift occurred with the enactment of the Disaster Management Act, 2005, which established a comprehensive disaster governance structure through the National Disaster Management Authority (NDMA), State Disaster Management Authorities (SDMAs), and District Disaster Management Authorities (DDMAs) (2005). The Act emphasises preparedness, capacity building, and community participation, thereby providing a formal space for volunteer-based organisations such as Civil Defence to integrate into district-level disaster management plans. This legislative framework legally embedded Civil Defence volunteers into disaster preparedness, mitigation, and response mechanisms, moving beyond its earlier war-centric mandate (Palliyath & Kumar, 2021).

The KM Singh Committee Report (2009) represents a critical milestone in the evolution of Civil Defence in India. The committee strongly recommended revamping Civil Defence into a community-anchored disaster preparedness force. It proposed a shift from town-specific units to district-wide coverage, expansion of the volunteer base, and stronger coordination with local self-government institutions. The report highlighted the need for Civil Defence to play a proactive role in public awareness, capacity building, and pre-disaster preparedness, while also functioning as a supplementary force during disasters. However, it also identified gaps such as weak community engagement, limited training infrastructure, and inadequate institutional support (2009).

(Mladenović et al., 2024) In the evaluation of Serbia's civil defence system, found that unclear legal mandates, weak institutional integration, and insufficient volunteer support significantly limited programme effectiveness. These studies collectively suggest that without systematic evaluation and sustained institutional backing, civil defence systems struggle to achieve their intended outcomes.

More recent scholarship has examined the integration of civil defence with disaster risk reduction frameworks. (Rajan & James, 2022) observed that in India, the convergence of civil defence with disaster management mandates remains incomplete, with significant variations across states in terms of volunteer deployment, training standards, and institutional coordination. Their study of four Indian states found that while policy frameworks exist at the national level, implementation gaps persist due to inadequate funding, irregular training schedules, and the absence of performance monitoring mechanisms. This finding resonates with earlier observations by (Sinha, 2018), who noted

that civil defence organisations in India continue to face challenges related to volunteer attrition, outdated training modules, and limited integration with local governance structures.

2.2.2 Community Participation in Emergency Preparedness

Community participation is widely recognised as a cornerstone of effective disaster preparedness and response. Literature consistently highlights that local communities, owing to their contextual knowledge and social networks, often act as first responders during emergencies (Shaw, 2012; Twigg, 2015). Studies on disaster experiences in Kerala, particularly the floods of 2018 and 2019, demonstrate how neighbourhood networks, informal volunteer groups, and local institutions played a decisive role in rescue, relief, and recovery efforts when formal systems were overwhelmed or delayed (James & Joseph, 2020; Menon & Nair, 2021).

The study on disaster mitigation through community participation among Kochi residents following the Kerala floods revealed that households with stronger social capital exhibited better preparedness behaviours, quicker adaptation, and enhanced resilience (Krishnakumar & Indira, 2020). Community-led actions such as information sharing, evacuation assistance, and resource mobilisation significantly reduced disaster impacts. However, the study also noted that such participation was largely spontaneous, uneven, and unstructured, leading to disparities across regions and communities. This highlights a critical limitation: while community participation is strong in Kerala, it often lacks formal training and institutional continuity (Krishnakumar & Indira, 2020).

Kerala-specific policy-oriented studies further emphasise this gap. Hakkim and Deb (2023), analysing civic response during the Kerala floods, observed that local volunteers acted as primary responders using intimate knowledge of terrain and community resources. Their findings underscore the importance of decentralised governance and formal recognition of civilian responders. The authors argue that legislative and policy reforms are essential to institutionalise community expertise and integrate grassroots participation into formal disaster risk reduction frameworks. Similarly, Nair and Suresh (2022) documented that communitybased organisations and neighbourhood groups in Kerala demonstrated remarkable coordination during the 2018 floods, yet this coordination was largely informal and not integrated into district-level disaster management plans.

The KERALAEEYAM 2023 report by the Kerala State Disaster Management Authority (2024) documents state-led efforts to bridge this gap through structured capacity-building initiatives involving Civil Defence volunteers, Aapda Mitra, and community members. The report highlights that interactive training programmes and practical drills enhanced volunteer confidence and community engagement. Nevertheless, it also acknowledges challenges in sustaining long-term participation and scaling training infrastructure across districts. These findings reinforce the need to evaluate how formal programmes like Civil Defence convert spontaneous community participation into sustained, trained, and coordinated preparedness.

International literature on community participation reinforces these observations. (H. et al., 2008), in their foundational work on community resilience, identified that community participation operates through networked resources, social capital, and collective efficacy. Their framework suggests that formal volunteer programmes can serve as mechanisms for translating community social capital into organised disaster preparedness. (Aldrich, 2012), in his comparative study of disaster recovery across multiple countries, demonstrated that communities with stronger bonding and bridging social capital recovered more rapidly and effectively, even in the absence of robust formal institutional support. These findings underscore the potential of volunteer-based programmes like Civil Defence to harness existing community social capital for disaster preparedness.

2.2.3 Volunteerism and Citizen Involvement in Disaster Management

Volunteerism plays a vital role in strengthening community resilience during disasters. Literature indicates that volunteers contribute across multiple phases of disaster management, including preparedness, response, and recovery (Cottrell & Prior, 2022; Twigg & Mosel, 2017). Mishra and Sharma (2023), in their evaluation of Civil Defence volunteers during the COVID19 pandemic in Chandigarh, found that volunteers were actively engaged in health service delivery, awareness campaigns, logistics, and community support. While the study acknowledged the significant contribution of volunteers, it also identified challenges such as irregular training, inadequate infrastructure, and limited institutional support, which undermined long-term programme effectiveness.

Broader studies on volunteerism further illuminate these dynamics. Ganoe, Joyner, and Sihotang (2023) found that volunteer motivations are driven by altruism, a sense of duty, and prior disaster experiences. Their research demonstrated that volunteer involvement not

only accelerates recovery but also enhances psychological well-being and community empowerment. However, sustaining volunteer engagement requires formal recognition, ethical safeguards, and institutional support mechanisms. These findings align with earlier work by Hustinx et al. (2010), who observed a global trend toward episodic and flexible volunteering, which poses challenges for formal volunteer programmes that require sustained commitment.

The literature on informal volunteerism, as reviewed by (Whittaker et al., 2015), expands this understanding by highlighting the role of spontaneous and unaffiliated volunteers during emergencies. The authors argue that traditional disaster management frameworks often overlook these actors, despite their significant contributions. They also caution that without adaptive management models, legal clarity, and coordination mechanisms, informal volunteerism can pose challenges to safety and accountability. This reinforces the importance of structured volunteer programmes like Civil Defence that can channel citizen participation into organised and accountable disaster response systems.

The functional theory of volunteerism, developed by Clary et al. (1998), provides a valuable lens for understanding volunteer engagement. This theory posits that individuals volunteer because the activity serves important psychological and social functions, including expressing values, gaining understanding, enhancing self-esteem, building social relationships, and advancing career prospects. Subsequent research has applied this framework to disaster volunteering contexts, demonstrating that volunteers whose motivations align with programme demands are more likely to sustain engagement and perform effectively.

2.2.4 Kerala-Specific Context of Civil Defence

Kerala's disaster profile and strong tradition of civic engagement provide a unique context for evaluating Civil Defence volunteers. The state is highly vulnerable to multiple hazards, including floods, coastal erosion, landslides, and cyclones, with climate change expected to increase the frequency and intensity of these events (2020). The catastrophic floods of 2018, which claimed over 400 lives and displaced more than one million people, represented a watershed moment in the state's disaster management approach (Joseph & James, 2019). Following these events, Kerala formally activated and expanded its Civil Defence volunteer

programme under the Kerala State Disaster Management Authority, integrating it with the Fire and Rescue Services (2021).

State-level initiatives such as KERALEEYAM and Aapda Mitra reflect efforts to institutionalise community-based disaster preparedness through trained volunteer cadres (2024). The KERALEEYAM programme, launched in 2020, aims to enhance disaster resilience through community-level training, mock drills, and awareness campaigns. Civil Defence volunteers have been integrated into these initiatives, serving as trainers and coordinators at the grassroots level. The programme's annual reports indicate that over 10,000 Civil Defence volunteers have been trained across Kerala, with coverage extending to all 14 districts (2024).

Despite these initiatives, existing literature and reports remain largely descriptive or policy-oriented. While they document training efforts, volunteer mobilisation, and community engagement, they do not provide empirical, programme-level evaluations of effectiveness from the volunteers' perspective. Issues related to retention, operational challenges, institutional coordination, and measurable community participation outcomes remain underexplored. (George & Thomas, 2022) noted that while Kerala has made significant strides in institutionalising volunteer-based disaster preparedness, systematic evaluation frameworks to assess volunteer effectiveness are lacking. Similarly, a study by (Kumar & Pillai, 2023) on disaster volunteerism in coastal Kerala found that volunteers often face role ambiguity, inadequate equipment, and limited coordination with formal response agencies, yet these challenges have not been systematically documented or addressed.

2.3 Theoretical Framework

2.3.1 Community Resilience Theory

The theoretical framework provides the conceptual foundation that guides the understanding, analysis, and interpretation of a research problem. It helps explain the relationships among variables, supports the formulation of research objectives, and provides a lens through which empirical findings can be interpreted. In the present study, *Civil Defence Volunteers in Kerala: An Evaluation of Programme Effectiveness and Community Participation*, the theoretical framework is based on **Community Resilience Theory**.

Community Resilience Theory has emerged as a significant perspective in disaster management and disaster risk reduction research. The theory emphasizes the capacity of communities to anticipate, prepare for, respond to, adapt to, and recover from adverse events while maintaining essential social functions and structures (Norris et al., 2008). Rather than viewing disasters solely as emergency events requiring external intervention, the theory highlights the importance of local capacities, community participation, social networks, collective action, and institutional support in strengthening resilience.

According to Norris et al. (2008), community resilience is a process that links a network of adaptive capacities to positive adaptation following a disaster or crisis. These adaptive capacities include economic resources, social capital, information and communication systems, and community competence. Communities possessing strong adaptive capacities are more capable of mobilizing resources, coordinating collective action, and responding effectively to disasters. Consequently, resilience is not merely the ability to recover from a disaster but also the capacity to learn, adapt, and strengthen preparedness for future hazards.

The theory further emphasizes the role of community participation in building resilience. Active participation of community members in preparedness activities, awareness programmes, volunteer initiatives, and local decision-making processes contributes to the development of collective efficacy and social cohesion, both of which are essential components of resilient communities (Norris et al., 2008). Community-based disaster management approaches are therefore grounded in the assumption that local people are not passive recipients of assistance but active contributors to disaster preparedness, response, and recovery.

Community Resilience Theory is highly relevant to the present study because Civil Defence volunteers function as a community-based disaster preparedness and response mechanism. Through training programmes, awareness campaigns, rescue support, emergency response activities, and community engagement initiatives, Civil Defence volunteers contribute to strengthening local capacities and enhancing resilience at the grassroots level. The effectiveness of the programme can therefore be understood in terms of its ability to build community competence, facilitate participation, strengthen social networks, and improve preparedness for disasters.

The major dimensions examined in the present study can be interpreted through the lens of Community Resilience Theory. Programme effectiveness reflects the extent to which the

Civil Defence programme contributes to capacity building and preparedness. Community participation reflects the involvement of local residents in disaster preparedness activities and collective action. Volunteer performance and engagement represent the mobilization of community resources and social capital. Operational readiness reflects the preparedness capacity of volunteers to respond effectively during emergencies. Together, these dimensions contribute to the overall resilience of communities facing disaster risks.

The application of Community Resilience Theory provides a comprehensive framework for understanding how Civil Defence volunteers contribute to disaster preparedness and community participation in Kerala. By linking programme effectiveness, volunteer engagement, preparedness, and community involvement, the theory offers a suitable conceptual basis for evaluating the role of Civil Defence in strengthening community resilience and promoting sustainable disaster risk reduction.

2.4 Research Gaps Identified

The reviewed literature reveals several critical gaps that justify the need for the present study:

There is a lack of empirical studies evaluating the effectiveness of Civil Defence volunteer programmes at the micro or district level in Kerala. While national-level policy documents and state-level reports describe programme structures and activities, they do not provide systematic assessment of whether these programmes achieve their intended outcomes in terms of volunteer preparedness, community engagement, and disaster response effectiveness.

Second, while community participation during disasters is well documented in Kerala, there is limited assessment of how formal Civil Defence structures sustain and enhance such participation over time. Most existing research focuses on spontaneous, informal community action during disaster events rather than on the institutional mechanisms that can channel such participation into structured, coordinated, and sustainable preparedness systems.

The volunteer-centric studies focusing on training adequacy, institutional support, role clarity, and performance outcomes are scarce in the Indian context, and particularly in Kerala. Most existing studies focus on policy frameworks or spontaneous community action rather than structured programme evaluation. The few studies that examine volunteer

effectiveness tend to be descriptive and lack rigorous quantitative or mixed-method approaches.

There is a notable absence of theoretically grounded evaluation frameworks applied to Civil Defence programmes in India. While disaster resilience theory and volunteerism theories have been extensively used in international disaster research, their application to evaluating volunteer programmes in the Indian context remains limited.

The integration of Civil Defence volunteers with other disaster management agencies, including Fire and Rescue Services, local self-government institutions, and community-based organisations, has not been systematically examined. Understanding these coordination mechanisms is essential for optimising volunteer deployment and enhancing overall disaster preparedness.

2.5 Chapter Summary

This chapter reviewed the relevant literature pertaining to Civil Defence systems, disaster management policies, community participation, and volunteerism in disaster contexts. The review demonstrated that community participation and volunteer engagement play a significant role in enhancing disaster preparedness, response, and resilience. Existing studies highlighted the contributions of volunteers in strengthening local capacities while also identifying challenges related to training, institutional support, coordination, and sustainability.

The chapter further examined the Kerala-specific context of disaster management and Civil Defence, emphasizing the state's increasing reliance on community-based preparedness initiatives following major disaster events. Theoretical perspectives including Disaster Resilience Theory, Functional Theory of Volunteerism, and Social Capital Theory were discussed to provide a conceptual foundation for understanding programme effectiveness, volunteer participation, and community engagement.

The review also identified important research gaps, particularly the lack of empirical evaluations of Civil Defence programmes from the perspective of volunteers, limited evidence regarding programme effectiveness and community participation, and insufficient application of theory-driven evaluation frameworks in the Indian context. These gaps provide the justification for the present study.

The next chapter describes the methodology adopted for conducting the study, including the research design, sampling procedures, data collection methods, and analytical techniques employed.

CHAPTER III

METHODOLOGY

CHAPTER 3 : METHODOLOGY

3.1 Introduction

Research methodology constitutes a fundamental component of scientific inquiry as it provides the systematic procedures through which research questions are addressed and study objectives are achieved. It encompasses the overall strategy, methods, and techniques employed by the researcher to collect, analyse, and interpret data in a manner that ensures validity, reliability, and objectivity (Creswell & Creswell, 2018). A well-defined methodology enhances the credibility of research findings by providing a transparent framework that enables the systematic examination of the phenomenon under investigation.

In programme evaluation research, methodological rigor assumes particular significance because the primary objective is to assess the effectiveness, outcomes, and overall performance of a programme based on empirical evidence (Rossi, Lipsey, & Freeman, 2004). Evaluation studies seek not only to determine whether a programme has achieved its intended objectives but also to identify factors influencing its success, challenges affecting implementation, and areas requiring improvement. Consequently, the selection of an appropriate research methodology is essential for generating reliable evidence that can support decision-making, policy development, and programme enhancement.

This chapter describes the methodological framework adopted for conducting the study. It presents the research approach, research design, universe of the study, sampling procedures, inclusion and exclusion criteria, data collection tools, and methods of data collection. The chapter further explains the operational definitions of key concepts, procedures adopted for ensuring reliability and validity of the research instrument, and the statistical techniques employed for data analysis. In addition, ethical considerations observed during the research process, assumptions underlying the study, and limitations encountered during the investigation are discussed. Together, these methodological components provide the foundation for the systematic collection and analysis of data and ensure that the findings of the study are scientifically sound and aligned with the research objectives.

The methodology outlined in this chapter serves as the basis for examining programme effectiveness, community participation, volunteer performance, and operational readiness among Civil Defence volunteers.

3.2 Title of the Study

Civil Defence Volunteers in Kerala: An Evaluation of Programme Effectiveness and Community Participation

3.3 Objectives

3.3.1 General Objective

To evaluate the effectiveness of the Civil Defence Volunteer programme in enhancing community participation in Thiruvananthapuram district.

3.3.2 Specific Objectives

- To evaluate the effectiveness of the Civil Defence programme implementation and training in achieving its intended goals
- To examine the extent and forms of community participation facilitated through the programme
- To identify factors influencing active participation and performance of volunteers
- To understand the level of operational readiness among Civil Defence volunteers

3.4 Definition of Concepts

The study uses key concepts related to programme effectiveness, community participation, and disaster preparedness. These concepts are defined both theoretically and operationally to ensure clarity and consistency in measurement.

3.4.1 Theoretical and Operational Definitions

Table No: 3.4.1

Table 0-1

Sl. No	CONCEPTS	THEORETICAL DEFINITION	OPERATIONAL DEFINITION
1.	Programme Effectiveness	Programme effectiveness refers to the extent to which a programme achieves its intended goals and objectives and produces the desired outcomes among its target population (Rossi, Lipsey, & Freeman, 2004).	Programme effectiveness was measured through indicators such as perceived training effectiveness, acquisition of disaster management knowledge and skills, opportunities for participation, community outreach activities, and institutional support received by Civil Defence volunteers.
2.	Community Participation	Community participation refers to the active involvement of community members in identifying needs, planning, implementing, and evaluating activities that affect their wellbeing and development (Pretty, 1995).	Community participation was measured through the frequency of volunteer-community interaction, involvement of community members in awareness and preparedness activities, participation in local disaster management initiatives, and perceived community engagement in Civil Defence activities.

3.	Operational Readiness	Operational readiness refers to the capacity and preparedness of individuals or organizations to respond effectively and efficiently during emergencies and disaster situations (UNDRR, 2015).	Operational readiness was measured through volunteers' perceived preparedness, knowledge of emergency procedures, confidence in disaster response, participation in training and mock drills, and ability to mobilize resources during emergencies.
4.	Volunteer Performance	Volunteer performance refers to the extent to which volunteers effectively carry out assigned roles and responsibilities and contribute to the achievement of programme objectives (Penner, 2002).	Volunteer performance was measured through the level of participation in Civil Defence activities, application of acquired skills, leadership involvement, responsiveness during programme activities, and contribution to disaster preparedness and response initiatives.

3.5 Pilot Study

The trainee conducted a pilot study test the feasibility and clarity of the research tool. During this phase, the researcher also collected the required permissions and details of volunteers from the District Fire Officer, Thiruvananthapuram.

The pilot study helped in refining the questionnaire by identifying ambiguities, improving question structure, and ensuring alignment with research objectives. Necessary modifications were made before the final data collection.

3.6 Research Approach

The study adopts a quantitative research approach. According to Creswell (2018), quantitative research involves the systematic investigation of phenomena through numerical data and statistical analysis, allowing researchers to test relationships between variables

objectively rather than relying on subjective interpretation. This approach was considered appropriate for the present study as it enabled the researcher to translate abstract concepts such as programme effectiveness, community participation, volunteering attitude, and operational readiness into structured, measurable variables that could be systematically analyzed.

A quantitative approach was particularly suited to the aims of this study because it allowed the researcher to move beyond individual volunteer narratives and instead examine patterns across the wider volunteer population identifying, for instance, whether effectiveness and readiness varied consistently by factors such as age, area of residence, or length of service. Bryman (2016) notes that quantitative research is especially valuable where the researcher seeks to establish the extent and distribution of a phenomenon across a population, rather than to explore the depth of a single case or a small number of experiences. Since the present study was concerned precisely with how consistently the Civil Defence programme performs across its volunteer base as a whole, this distinction made the quantitative approach the more suitable choice over a qualitative or purely exploratory one.

The approach also allowed for the objective analysis of relationships between the key variables central to the study's objectives between training and perceived programme effectiveness, between volunteer characteristics and community participation, and between demographic factors and operational readiness. This made it possible to evaluate the programme's functioning across its different dimensions in a systematic and defensible manner.

3.7 Research Design

The present study adopted an evaluative research design to assess the effectiveness of the Civil Defence Volunteer programme in enhancing community participation in Thiruvananthapuram district. The selection of this design was guided by the nature of the research problem and the objectives of the study, which were concerned not simply with describing volunteer characteristics or activities, but with systematically assessing how well the programme has performed against its intended goals.

Evaluation research is concerned with systematically assessing the effectiveness, efficiency, and outcomes of programmes to determine whether they are functioning as intended and to provide evidence for decision-making (Babbie, 2021). Kothari (2004) similarly notes that

evaluative research examines the performance of programmes and interventions by identifying both their strengths and areas requiring improvement. This orientation aligned closely with the present study's objectives, which required an assessment not only of whether the Civil Defence programme was functioning, but of where it was functioning well and where gaps remained across programme implementation and training, community participation, volunteer participation and performance, and operational readiness.

The evaluative design further allowed the study to move beyond a single overall judgement of programme success and instead examine each of these dimensions individually, so that institutional and operational factors influencing performance could be identified with precision. The findings generated through this design provide empirical evidence intended to support programme administrators, disaster management authorities, and policymakers in strengthening volunteer management, improving programme implementation, and enhancing community-based disaster preparedness in Thiruvananthapuram district.

3.8 Universe of the Study

The universe of the study consists of all Civil Defence volunteers registered in Thiruvananthapuram district. These volunteers form the population from which the sample was drawn for the purpose of evaluating programme effectiveness and community participation.

3.9 Sampling Design

The study employed a simple random sampling technique to select respondents from the target population. Simple random sampling was considered appropriate as it provides each eligible volunteer an equal probability of selection, thereby reducing selection bias and enhancing the representativeness of the sample.

The sampling frame consisted of the list of Civil Defence volunteers who had successfully completed training and were registered under the first batch of the Civil Defence Volunteer Programme in Thiruvananthapuram district. The list was obtained through the District Fire and Rescue Services Office. The total number of trained volunteers in the sampling frame was 200, of whom a substantial proportion remained actively engaged in programme activities at the time of the study.

From this population, data were collected from 89 active Civil Defence volunteers through a structured questionnaire administered using Google Forms. The sample represented approximately

44.5 per cent of the total population of trained volunteers included in the sampling frame. The selected respondents met the inclusion criteria established for the study and were actively participating in Civil Defence activities during the period of data collection.

The use of simple random sampling ensured that the sample adequately reflected the characteristics of the study population, thereby facilitating a reliable assessment of programme effectiveness, community participation, volunteer performance, and operational readiness among Civil Defence volunteers in Thiruvananthapuram district.

Inclusion Criteria

- Individuals registered as Civil Defence volunteers in Thiruvananthapuram district
- Volunteers who completed training in the first three batches
- Civil Defence volunteers who have completed training

Exclusion Criteria

- Volunteers with less than one year of service
- Inactive or non-participating volunteers during the past year
- Volunteers from outside Thiruvananthapuram district

3.10 Data Collection

Data for the study were collected using a structured questionnaire developed by the researcher. The tool was designed in accordance with the objectives of the study and included sections on socio-demographic details, training, programme implementation, community participation, and operational readiness.

The internal consistency of the questionnaire was assessed using Cronbach's alpha prior to its use in the main study. The overall reliability coefficient was found to be 0.940 across the 31 items comprising the composite constructs of programme effectiveness, community

participation, volunteering attitude, and operational readiness, indicating a high level of internal consistency and confirming that the tool was reliable for the purposes of this study. Content validity was further established by reviewing each item against the study's theoretical and operational definitions of the relevant concept, ensuring that every item corresponded meaningfully to the construct it was designed to measure.

The questionnaire was administered through Google Forms, enabling efficient data collection and management.

3.11 Data Analysis

The data collected through the structured questionnaire were systematically coded, entered, and analysed using the Statistical Package for the Social Sciences (SPSS), Version 20. Prior to analysis, the data were screened for completeness, consistency, and accuracy to ensure the reliability of the results. Data cleaning procedures were undertaken to identify and remove incomplete or invalid responses, thereby improving the quality of the dataset used for analysis.

Both descriptive and inferential statistical techniques were employed to address the objectives of the study and facilitate a comprehensive understanding of the data. Descriptive statistics, including frequency, percentage, mean, standard deviation, and composite mean scores, were used to summarise and present the socio-demographic characteristics of the respondents as well as their perceptions regarding programme effectiveness, community participation, volunteering attitude, disaster preparedness, and volunteer well-being. These statistical measures enabled the identification of response patterns, distribution trends, and the overall level of the variables under investigation.

3.12 Ethical Consideration

Ethical considerations for the study involved ensuring the confidentiality and anonymity of all participants. The researcher clearly explained the purpose of the study to the respondents prior to data collection.

Data were handled with strict confidentiality, stored securely, and used solely for research purposes. Participants were assured that their responses would remain anonymous and that individual identities would not be disclosed in any reports or publications.

3.13 Assumptions, Limitations, and Scope of the Study

3.13.1 Assumptions

Every research study is conducted based on certain assumptions that guide the research process. The present study was undertaken with the following assumptions:

1. It was assumed that the respondents provided honest, accurate, and unbiased responses to the questionnaire based on their experiences as Civil Defence volunteers.
2. It was assumed that the participants possessed adequate knowledge and understanding of Civil Defence programme activities, training processes, and disaster management functions to provide meaningful responses.
3. It was assumed that the responses obtained through the structured questionnaire reflected the actual perceptions and experiences of the volunteers regarding programme effectiveness, community participation, and operational readiness.
4. It was assumed that the selected sample was representative of the active Civil Defence volunteers included within the sampling frame.

3.13.2 Limitations of the Study

Despite efforts to ensure methodological rigor, the study was subject to certain limitations.

1. The study was confined to Civil Defence volunteers in Thiruvananthapuram district; therefore, the findings may not be fully generalizable to volunteers in other districts of Kerala or other states of India.
2. The study relied primarily on self-reported data collected through a structured questionnaire. Consequently, the responses may have been influenced by social desirability bias, recall bias, or personal perceptions of the respondents.
3. The study adopted a cross-sectional research design, wherein data were collected at a single point in time. As a result, changes in volunteer perceptions, programme effectiveness, or preparedness levels over time could not be assessed.

4. The study focused exclusively on the perspectives of Civil Defence volunteers and did not include the views of community members, programme administrators, or disaster management officials, which may have provided additional insights into programme effectiveness.
5. Resource and time constraints limited the scope of data collection and the inclusion of a larger sample from multiple districts.

3.13.3 Scope of the Study

The present study focuses on evaluating the effectiveness of the Civil Defence Volunteer Programme in Thiruvananthapuram district, Kerala. Specifically, the study examines programme effectiveness, community participation, volunteer performance, operational readiness, and factors influencing volunteer engagement in disaster management activities.

The findings of the study contribute to an enhanced understanding of the role of Civil Defence volunteers in strengthening community-based disaster preparedness and resilience. The study is expected to provide useful insights for programme administrators, disaster management agencies, policymakers, and social work professionals in improving volunteer management systems, strengthening community participation mechanisms, and enhancing the effectiveness of disaster preparedness initiatives. Furthermore, the findings may serve as a reference for future research on volunteer-based disaster management programmes and community resilience in Kerala and similar socio-environmental contexts.

3.14 Chapter Summary

This chapter presented the methodological framework adopted for the study. A quantitative evaluative research design was employed to assess the effectiveness of the Civil Defence Volunteer Programme and its role in promoting community participation. The chapter described the research approach, universe of the study, sampling procedures, inclusion and exclusion criteria, data collection methods, and statistical techniques used for analysis.

A structured questionnaire was utilized to collect data from Civil Defence volunteers in Thiruvananthapuram district. The chapter also discussed the pilot study conducted to refine the research instrument, ethical

nsiderations followed during the research process, and the assumptions, limitations, and scope of the study. The use of descriptive and inferential statistical techniques was outlined to demonstrate how the research objectives would be addressed through empirical analysis.

The methodological procedures adopted in the study were designed to ensure systematic data collection, objectivity, and reliability in evaluating programme effectiveness, community participation, volunteer performance, and operational readiness. The subsequent chapter presents the analysis and interpretation of the data collected from the respondents.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

CHAPTER IV : DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the analysis and interpretation of data collected for the study titled *“Civil Defence Volunteers: An Evaluation of Programme Effectiveness and Community Participation in Kerala.”* The primary purpose of this chapter is to systematically examine the empirical evidence generated through the research process and to interpret the findings in relation to the objectives of the study. Through statistical analysis and critical interpretation, the chapter seeks to provide a comprehensive understanding of the effectiveness of the Civil Defence Volunteer Programme, the extent of community participation facilitated through volunteer activities, the preparedness and operational readiness of volunteers, and the factors influencing volunteer engagement and performance. The data were collected from Civil Defence volunteers in Thiruvananthapuram district using a structured questionnaire administered through Google Forms. A total of 91 responses were received during the data collection process. Following data screening, verification, and cleaning procedures, 89 valid responses were retained for final analysis. The collected data were coded and analysed using the Statistical Package for the Social Sciences (SPSS), Version 26. Both descriptive and inferential statistical techniques were employed to ensure a comprehensive examination of the data and to address the research objectives in a systematic manner.

Descriptive statistical techniques such as frequency, percentage, mean, standard deviation, and composite mean scores were used to summarise respondent characteristics and to assess key dimensions of the study, including programme effectiveness, community participation, volunteering attitude, disaster preparedness, and volunteer well-being.

In addition to descriptive analysis, inferential statistical techniques were utilised to examine relationships and associations among selected variables. Pearson’s correlation analysis was employed to identify the direction and strength of relationships between selected socio-demographic and programme-related variables, while the Chi-square test was used to determine the existence of significant associations between categorical variables. These analyses contribute to a deeper understanding of factors influencing programme outcomes and volunteer experiences.

The chapter is organised in a logical sequence corresponding to the objectives of the study. It begins with an analysis of the socio-demographic profile of the respondents, providing an overview of the characteristics of the study population. Subsequently, objective-wise analyses are

presented, covering programme effectiveness, community participation, volunteering attitude, disaster preparedness, and volunteer well-being. The chapter further examines significant statistical relationships and associations identified through inferential analysis. In addition, qualitative insights obtained from open-ended responses are analysed thematically to capture volunteers' experiences, challenges, and suggestions regarding the Civil Defence programme. The integration of quantitative and qualitative findings provides a more comprehensive understanding of the programme and its functioning within the disaster management context.

For Sections C, D, E, and G of the questionnaire, responses were measured using a five-point frequency scale ranging from 1 (Never) to 5 (Always). Section F, which assessed volunteer well-being and perceptions, employed a four-point agreement scale ranging from 1 (Strongly Disagree) to 4 (Agree). To facilitate interpretation of the mean scores obtained from the analysis, the following criteria were adopted: 1.00–1.80 = Very Poor, 1.81–2.60 = Poor, 2.61–3.40 = Moderate, 3.41–4.20 = Good, and 4.21–5.00 = Very Good. These categories provide a framework for evaluating the level of programme effectiveness, participation, preparedness, and related dimensions examined in the study.

4.2 Socio-Demographic Profile of the Respondents

An understanding of the socio-demographic characteristics of Civil Defence volunteers is essential for contextualising programme participation patterns. The following tables present the distribution across eight variables: age, gender, occupation, area of residence, monthly household income, marital status, duration of association, and average days volunteered annually.

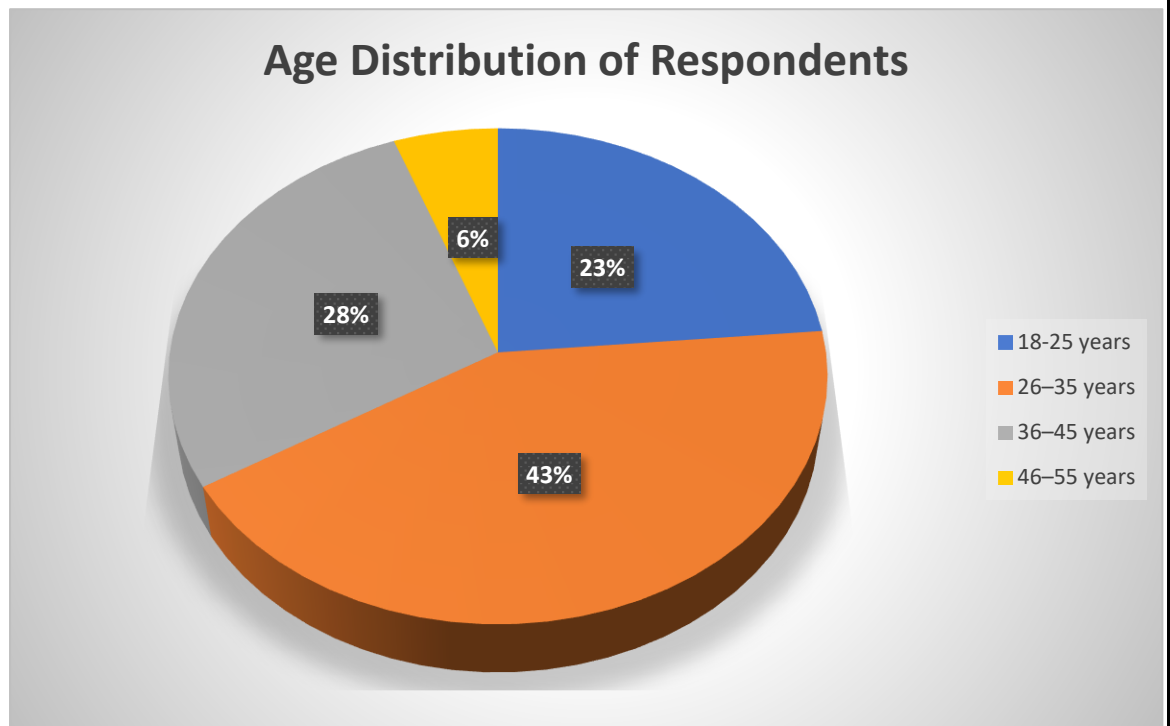


Figure 1 Age Distribution of Respondents

Figure 4.1 presents the age distribution of respondents. The largest proportion of volunteers belonged to the 26–35 age group (43.3%, $n = 38$), followed by the 36–45 age group (27.8%, $n = 25$) and the 18–25 age group (23.3%, $n = 21$). Only 5.6% ($n = 5$) were between 46–55 years of age. The concentration in the 26–35 age bracket is consistent with national volunteer demographic trends, where young working-age adults constitute the backbone of community disaster response programmes (NDMA, 2022). This age group typically combines physical capability, civic motivation, and professional experience attributes essential for effective field-level disaster response. The relatively low representation of volunteers above 45 years points to potential gaps in retaining experienced volunteers over time, which may affect institutional memory and mentorship within the programme.

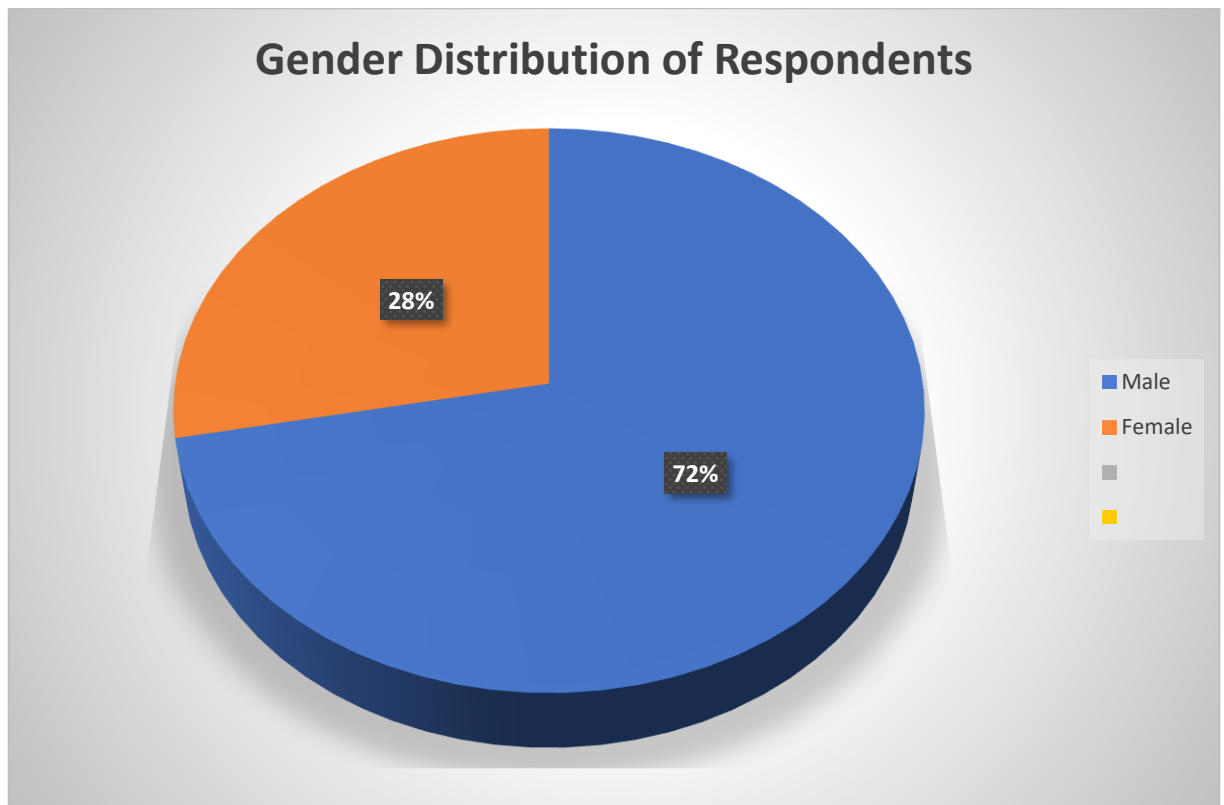


Figure 2 Gender Distribution of Respondents

Note: $N = 89$.

Figure 4.2: Gender Distribution of Respondents

Figure 4.2 shows that male volunteers constitute 72.0% of the sample while female volunteers account for 28.0%. This gender disparity is consistent with broader patterns in emergency and disaster volunteer organisations across India, where field-intensive roles are historically male-dominated owing to physical demands and prevailing sociocultural norms (Rajan & James, 2022). However, Kerala's comparatively higher civic participation of women is reflected in the 28% female representation, which exceeds the national average for community disaster volunteer programmes (KSDMA, 2023). Gender-responsive strategies including targeted outreach, flexible training schedules, and roles suited to women's participation could help improve gender parity and programme effectiveness in community engagement and awareness activities.

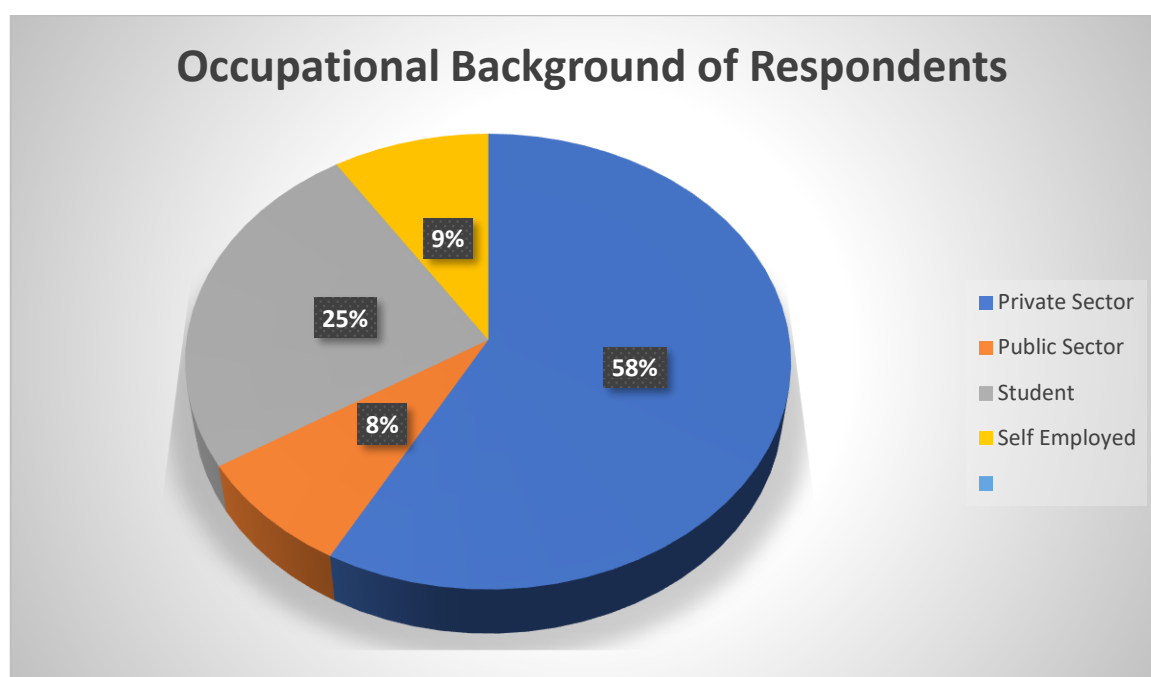


Figure 3 Occupational Background of Respondents

Figure 4.3: Occupational Background of Respondents

Figure 4.3 illustrates the occupational profile of the respondents. Private sector employees form the largest occupational group (56.18%, $n = 50$), followed by students (21.35%, $n = 19$) and self-employed individuals (12.36%, $n = 11$). Government sector employees constitute 7.9% ($n = 7$). The predominance of private sector employees is a significant finding. Unlike government employees, private sector volunteers receive no formal duty-leave entitlements for Civil Defence activities, implying that their participation involves a genuine personal and professional sacrifice. This underscores the intrinsic motivation underpinning volunteer commitment. The substantial student representation (21.35%) also highlights the programme's reach into educational institutions, which presents opportunities for early civic education and long-term volunteer pipeline development.

Table 4.4: Area of Residence of Respondents

Table 0-1

Category	Frequency	Percentage (%)
Rural	58	64.4

Category	Frequency	Percentage (%)
Urban	29	32.2
Coastal	2	3.3
Total	89	100.0

Note: N = 89.

Table 4.4 shows that the majority of volunteers (64.4%, n = 58) reside in rural areas, followed by urban areas (32.2%, n = 29) and coastal areas (3.3%, n = 2). The predominance of rural volunteers reflects the programme's effective outreach beyond urban administrative centres, which is particularly relevant given that rural panchayat areas in Thiruvananthapuram district are more frequently and severely affected by floods and landslides (KSDMA Annual Report, 2023). The proportionally lower coastal representation, despite Kerala's extensive coastline and high coastal vulnerability, suggests a specific area requiring targeted recruitment and capacity-building efforts within the district.

Table 4.5: Monthly Household Income of Respondents

Table 0-2

Category	Frequency	Percentage (%)	Cumulative (%)
Middle Income (₹15,001 – ₹50,000)	58	64.7	66.7
Low Income (Below ₹15,000)	29	32.2	98.9
High Income (Above ₹50,000)	1	1.1	100.0

Category	Frequency	Percentage (%)	Cumulative (%)
Total	89	100.0	

Note: N = 89.

Table 4.5 reveals that the majority of volunteers belong to the middle-income category (68.7%, n = 58), followed by the low-income category (32.2%, n = 29). Only one respondent (1.1%) belongs to the high-income group. Taken together, nearly all volunteers (98.9%) come from

middle- or low-income households. This finding has important policy implications: these volunteers absorb real economic costs through unpaid time, personal expenditure on travel and equipment, and career opportunity costs without any financial remuneration from the programme. The near-absence of high-income volunteers also suggests that financial disincentives are a real structural barrier, and that targeted welfare measures such as insurance coverage and travel allowances are not merely desirable but necessary for equitable and sustainable volunteer engagement.

Table 4.6: Marital Status of Respondents

Table 0-3

Category	Frequency
Single	49
Married	40
Total	89

Note: $N = 89$.

Table 4.6 presents the marital status of respondents. Single volunteers constitute a marginal majority at 55.6% ($n = 49$), while 44.4% ($n = 40$) are married. The slightly higher proportion of single volunteers is consistent with the concentration of respondents in the younger age cohorts (18–35 years), where marriage rates are lower. Single volunteers may have relatively greater flexibility in time commitment and mobility for field deployments. The substantial representation of married volunteers (44.4%) is equally noteworthy: it indicates that a significant segment of volunteers manage family responsibilities alongside active programme participation a reflection of strong motivation and social commitment to disaster service.

Figure 4.4 : Duration of Association with Civil Defence Programme

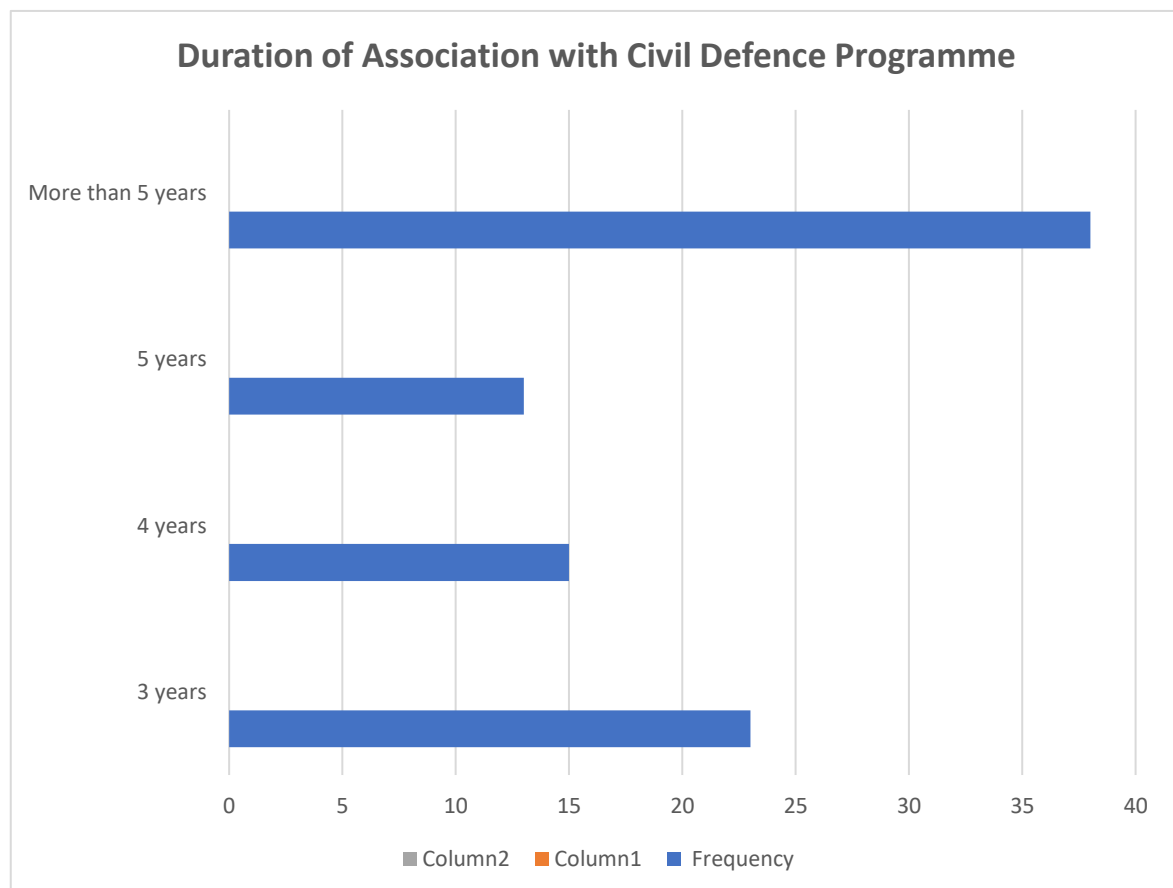


Figure 4 Duration of Association with Civil Defence Programme

Figure 4.4 illustrates the duration of association of the respondents with the Civil Defence Volunteer Programme. Among the 89 respondents, the largest proportion (38) had been associated with the programme for more than five years, followed by 23 respondents who had completed three years of service. Fifteen respondents reported four years of association, while 13 respondents had been associated with the programme for five years.

The distribution indicates that a majority of the respondents have been associated with the Civil Defence Volunteer Programme for several years, suggesting that the study predominantly captured the perceptions of experienced volunteers. This level of experience is likely to have enabled respondents to provide informed opinions regarding programme implementation, community participation, volunteer performance, and operational readiness.

Table 4.7: Duration of Association with Civil Defence Programme

Table 0-4

Category	Frequency	Percentage (%)
3 years	23	25.6
4 years	15	16.7
5 years	13	14.4
More than 5 years	38	43.3
Total	89	100.0

Note: N = 89. Duration categories coded as: 1 = 3 years, 2 = 4 years, 3 = 5 years, 4 = More than 5 years.

Table 4.7 presents the duration of association of volunteers with the Civil Defence programme. The largest group comprises volunteers with more than five years of service (43.3%, n = 38), indicating a substantial core of long-serving, experienced members. Combined with those who have served five years (14.4%), more than 57% of the sample has five or more years of programme engagement. This finding reflects a reasonably stable volunteer base, suggesting that retention while imperfect is not negligible. However, it also raises questions about the adequacy of upward skill progression and leadership development opportunities for experienced volunteers, who may be experiencing stagnation in role and recognition if refresher training and role advancement are as infrequent as the programme effectiveness data suggest.

Table 4.8: Average Number of Days Volunteered Annually

Table 0-5

Category	Frequency	Percentage (%)
More than 60 days	44	48.9
41–60 days	18	20.0
21–40 days	19	21.1
Less than 20 days	8	10.0
Total	89	100.0

Note: N = 89.

Table 4.8 shows the average number of days volunteered annually by respondents. Notably, nearly half of all volunteers (48.9%, $n = 44$) serve more than 60 days annually without financial compensation, while a further 20.0% ($n = 18$) volunteer between 41–60 days. Cumulatively, 68.9% of respondents volunteer for more than 40 days per year. This level of time investment is substantially higher than the national average of 15–30 days reported for community disaster management volunteers (NDMA Annual Report, 2022), and it is remarkable given the complete absence of financial remuneration. The data underscore that the programme is sustained by genuinely committed volunteers whose intrinsic motivation overrides the financial costs of participation. This finding, however, also highlights a sustainability risk: when institutional support fails to reciprocate this level of commitment, volunteer attrition becomes increasingly probable over time.

Table 4.9: Specialised Training Modules Completed by Respondents

Table 0-6

Training Module	Frequency (n)	Percentage (%)
Medical First Aid	84	92.3
Fire Fighting	77	84.6
Search and Rescue	73	80.2
Flood Rescue	71	78.0
Communication & Logistics	39	42.9

Note: N = 89..

Table 4.9 presents the specialised training modules completed by respondents. Medical First Aid was the most widely completed module (92.3%, n = 84), followed by Fire Fighting (84.6%, n = 77), Search and Rescue (80.2%, n = 73), and Flood Rescue (78.0%, n = 71). Communication and Logistics training had the lowest uptake at 42.9% (n = 39). The high completion rates across core response modules indicate that the Civil Defence programme's initial training design is comprehensive and aligned with Kerala's multi-hazard profile. However, the substantially lower completion of Communication and Logistics training is a notable gap, as effective coordination and information management are critical competencies during multi-agency disaster operations. This gap is further reflected in the inferential data on inter-agency coordination discussed in subsequent sections.

4.3 Objective 1: To Evaluate the Effectiveness of Civil Defence Programme Implementation and Training

The first objective examined the extent to which Civil Defence programme management functions including administrative planning, communication, training, and post-operation review were effectively implemented in Thiruvananthapuram district. Seven items were assessed on a five-point frequency scale (1 = Never to 5 = Always). The SPSS-generated descriptive statistics presented below are based on scores computed using a reverse-coded scheme in which higher scores indicate greater programme effectiveness.

Table 4.10: Descriptive Statistics Programme Effectiveness (Section C)

Table 0-7

Item	N	Min.	Max.	Mean	SD
Annual action plans implemented without administrative delays	89	0.00	5.00	3.43	1.61
Volunteers were informed in advance about activities or duties	89	1.00	5.00	4.36	1.15

Item	N	Min.	Max.	Mean	SD
Coordination meetings took place during programme activities	89	1.00	5.00	4.42	0.99
Written Standard Operating Procedures (SOPs) provided prior to field operations	89	1.00	5.00	3.84	1.22
Refresher training sessions conducted at least once every year	89	1.00	5.00	4.52	1.01
Administrative support from district/state authorities was sufficient	89	1.00	5.00	4.51	0.97
Review or debriefing meetings conducted after emergency operations	89	1.00	5.00	4.27	1.17
Composite Mean Score (Section C)	89			4.19	0.84

Note: Scale: 1 = Never to 5 = Always. Source: SPSS Output, Descriptive Statistics. Composite mean computed from all seven items.

Table 4.10 presents the descriptive statistics for programme effectiveness. The composite mean score for Section C is 4.19 (SD = 0.84), placing programme effectiveness in the 'Good' range on the interpretive scale (3.41–4.20). This indicates that, on the whole, volunteers perceive the programme's management functions as generally effective, though approaching the threshold below which perceptions would transition to 'Very Good.'

Examining individual items, refresher training sessions (M = 4.52, SD = 1.01) and administrative support from authorities (M = 4.51, SD = 0.97) received the highest mean scores, both falling in the 'Very Good' range. This suggests that, according to respondents, annual refresher training and institutional administrative support are the best-performing dimensions of programme implementation. Coordination meetings (M = 4.42, SD = 0.99)

and advance communication to volunteers ($M = 4.36$, $SD = 1.15$) also scored in the 'Very Good' range, indicating that operational communication and coordination are perceived relatively favourably.

Post-operation debriefing ($M = 4.27$, $SD = 1.17$) and provision of written SOPs ($M = 3.84$, $SD = 1.22$) received comparatively lower scores, with the SOP item falling in the 'Good' range. The annual action plan implementation item recorded the lowest score ($M = 3.43$, $SD = 1.61$) and the highest standard deviation, indicating significant variability in volunteers' experiences of administrative planning across stations. The high standard deviation for the action plan item ($SD = 1.61$) also warrants attention: it suggests that while some volunteers report consistently implemented plans, others rarely experience structured administrative planning indicating station-level inconsistencies in programme management. This finding aligns with Rajan and James (2022), who observed that civil defence programme implementation across Indian districts is highly uneven, with significant variation in administrative efficiency across units within the same state.

Table 4.11: Correlation between Level of Programme Effectiveness and Age

Table 0-8

Variable Pair		r	p-value	Sig.	Interpretation		
Programme Effectiveness ↔ Age		.227	.033	Yes ($p < .05$)	Weak correlation	positive older volunteers tend to report marginally higher effectiveness scores	significant

*Note: Pearson's r, two-tailed significance. $N = 89$. $*p < .05$.*

A Pearson's correlation analysis was conducted to examine the relationship between the level of programme effectiveness (composite score) and the age of respondents. The result reveals a statistically significant weak positive correlation ($r = .227$, $p = .033$), indicating that older volunteers tend to report slightly higher programme effectiveness scores than their younger counterparts. This finding may reflect the reality that senior volunteers, who have longer programme experience and have navigated multiple disaster deployment cycles, tend to assess institutional processes more favourably based on their longitudinal perspective, compared to newer and younger volunteers who may carry higher initial

expectations. Alternatively, older volunteers may occupy slightly more senior roles within the volunteer hierarchy, granting them better access to administrative processes and coordination channels.

Table 4.12: Chi-Square Test Level of Programme Effectiveness by Area of Residence

Table 0-9

Area of Residence	Low (1)	Moderate (2)	High (3)	Total	χ^2	p	Sig.
Urban (n = 29)	2	5	22	29	9.561	.049	Yes*
Rural (n = 58)	4	21	33	58			
Coastal (n = 2)	1	1	0	2			
Total	7	27	55	89			

*Note: Level of effectiveness: 1 = Low, 2 = Moderate, 3 = High. $\chi^2(4) = 9.561$, $p = .049$. *Significant at $p < .05$. Caution: 5 cells (55.6%) have expected count less than 5.*

Table 4.12 presents the chi-square test results for the association between area of residence and level of programme effectiveness. The Pearson Chi-Square value is 9.561 (df = 4, $p = .049$), which is statistically significant at the 0.05 level. Among urban volunteers, 75.9% (n = 22) reported high effectiveness, compared to 56.9% (n = 33) of rural volunteers and 0.0% of coastal respondents. This significant association suggests that programme effectiveness perceptions differ meaningfully across residential contexts. Urban volunteers may benefit from closer proximity to district administrative offices, fire stations, and coordination nodes, resulting in more consistent exposure to programme activities. In contrast, rural and coastal volunteers may face geographic barriers to training,

communication, and administrative engagement. These findings highlight the need for decentralised programme management and targeted outreach to rural and coastal volunteer clusters. It is noted, however, that the small coastal sample (n = 2) limits the generalisability of findings for this group.

Table 4.12a: Level of Programme Effectiveness Frequency Distribution

Table 0-10

Category	Frequency	Percentage (%)
Low	7	7.9
Moderate	27	30.3
High	55	61.8
Total	89	100.0

Note: N = 89. Composite score recoded into three levels: Low , Moderate , High .

Table 4.12a presents the distribution of volunteers by level of programme effectiveness. The majority of respondents (61.8%, n = 55) reported a high level of programme effectiveness, while 30.3% (n = 27) reported moderate effectiveness, and 7.9% (n = 7) reported low effectiveness. This distribution confirms that the Civil Defence programme is perceived as largely effective by the majority of volunteers in Thiruvananthapuram district, consistent with the composite mean score of 4.19 reported in Table 4.10.

Table 4.12b: Chi-Square Test Summary Level of Programme Effectiveness by Demographic Variables

Table 0-11

Demographic Variable	df	χ^2	p-value	Significant
Age	6	6.841	.336	No
Gender	2	4.016	.134	No
Occupation	8	6.547	.586	No
Area of Residence	4	9.561	.049	Yes*
Monthly Household Income	4	4.357	.360	No
Marital Status	2	4.849	.089	No
Duration of Association	6	6.777	.342	No
Avg. Days Volunteered Annually	8	8.226	.412	No

*Note: N = 89. *Significant at $p < .05$. Degrees of freedom (df) reflect number of categories. Caution: Several cells have expected counts less than 5; results should be interpreted with care.*

Table 4.12b presents the chi-square test results for the association between level of programme effectiveness and all demographic variables. Among the eight demographic variables examined, only area of residence yielded a statistically significant association ($\chi^2(4) = 9.561$, $p = .049$), as discussed in Table 4.12. All other demographic variables including age, gender, occupation, monthly income, marital status, duration of association, and average days volunteered annually showed no statistically significant association with programme effectiveness level ($p > .05$ in all cases). This finding indicates that programme

effectiveness perceptions are broadly consistent across most demographic groups, with geographic location being the primary differentiating factor.

4.4 Objective 2: To Examine the Extent and Forms of Community Participation Facilitated through the Programme

The second objective assessed the extent to which Civil Defence volunteers engaged with local communities through information sharing, direct interaction, logistical cooperation with local organisations, and social recognition. Five items were measured on a five-point frequency scale.

Table 4.13: Descriptive Statistics Community Participation (Section D)

Table 0-12

Item	N	Min.	Max.	Mean	SD
Community members were present during Civil Defence activities	89	1.00	5.00	4.15	1.17
Actively shared information on disaster preparedness with family/community	89	1.00	5.00	4.38	1.05
Interacted with local residents during preparedness activities	89	1.00	5.00	4.30	1.00
Local community organisations provided logistical support during activities	89	1.00	5.00	3.75	1.20

Item	N	Min.	Max.	Mean	SD
Community members show respect or appreciation for my role as a volunteer	89	1.00	5.00	4.31	1.02
Composite Mean Score (Section D)	89			4.18	0.84

Note: Scale: 1 = Never to 5 = Always. Source: SPSS Output. Composite mean computed from all five items.

Table 4.13 presents the descriptive statistics for community participation. The composite mean of 4.18 (SD = 0.84) indicates a 'Good' level of community engagement overall. Active sharing of disaster preparedness information with family and community members recorded the highest mean score (M = 4.38, SD = 1.05), followed by community respect and appreciation (M = 4.31, SD = 1.02) and interaction with local residents during preparedness activities (M = 4.30, SD = 1.00). These three items all fall in the 'Very Good' to 'Good' range, suggesting that volunteers actively engage in outreach and awareness activities and feel socially recognised for their service.

Community member presence during Civil Defence activities (M = 4.15, SD = 1.17) also scored in the 'Good' range, indicating that programme activities are relatively visible to local communities. The lowest-scoring item was logistical support from local organisations (M = 3.75, SD = 1.20), which falls in the 'Good' range but suggests that formal institutional collaboration between Civil Defence and local community organisations remains comparatively less developed. The higher standard deviation on this item (SD = 1.20) also indicates considerable variation in the extent to which community organisations actively support programme activities across different volunteer areas. These findings are consistent with Krishnakumar and Indira (2020), who observed that informal community participation in Kerala is strong but often lacks formal institutional linkage with structured disaster management frameworks.

Table 4.14: Level of Community Participation Frequency Distribution

Category	Frequency	Percentage (%)
Low	2	2.2
Moderate	17	19.1
High	70	78.7
Total	89	100.0

Note: N = 89. Composite score recoded into three levels: Low , Moderate , High .

Table 4.14 presents the distribution of volunteers across three levels of community participation. The majority of respondents (78.7%, n = 70) exhibit a high level of community participation, while 19.1% (n = 17) demonstrate moderate participation, and only 2.2% (n = 2) report low participation. These findings confirm that the Civil Defence programme, at least in Thiruvananthapuram district, is broadly effective in facilitating volunteer engagement with local communities. The high proportion of volunteers at the high participation level is particularly significant given the lack of financial incentives and the structural weaknesses identified in programme management. It reinforces the view that volunteer commitment to community engagement is largely intrinsic and mission-driven rather than institutionally incentivised.

Table 4.15: Chi-Square Test Level of Community Participation by Age

Table 0-14

Age Group	Low (1)	Moderate (2)	High (3)	Total	χ^2	p	Sig.
18–25 years (n = 22)	0	6	16	22	15.415	.017	Yes
26–35 years (n = 37)	1	10	26	37			
36–45 years (n = 25)	0	1	24	25			
46–55 years (n = 5)	1	0	4	5			
Total	2	17	70	89			

Note: $\chi^2(6) = 15.415$, $p = .017$. *Significant at $p < .05$. Caution: 8 cells (66.7%) have expected count less than 5.

Table 4.15 presents the chi-square test results for the association between age and level of community participation. The test is statistically significant ($\chi^2(6) = 15.415$, $p = .017$), indicating that age is meaningfully associated with community participation levels. Examination of the crosstab reveals that volunteers in the 36–45 age group demonstrate the highest rate of high community participation (96.0%, $n = 24$ out of 25), followed by those in the 46–55 group (80.0%). Younger volunteers in the 18–25 group show a higher rate of moderate participation (27.3%) compared to older cohorts. This pattern suggests that community engagement deepens with age and experience: as volunteers accumulate years of service and community relationships, their capacity for sustained, meaningful community participation increases. This finding aligns with Putnam's (2000) Social Capital Theory, wherein social trust and civic engagement networks deepen with prolonged community involvement, enhancing both bridging and linking social capital over time.

Table 4.15a: Chi-Square Test Summary Level of Community Participation by Demographic Variables

Table 0-15

Demographic Variable	Df	χ^2	p-value	Significant
Age	6	15.415	.017	Yes*
Gender	2	2.847	.241	No
Occupation	8	7.312	.503	No
Area of Residence	4	5.203	.267	No
Monthly Household Income	4	5.891	.208	No
Marital Status	2	0.213	.899	No
Duration of Association	6	4.156	.656	No
Avg. Days Volunteered Annually	8	6.047	.643	No

*Note: N = 89. *Significant at $p < .05$. df = degrees of freedom.*

Table 4.15a presents the chi-square test results for the association between level of community participation and all demographic variables. As reported in Table 4.15, age shows a statistically significant association with community participation ($\chi^2(6) = 15.415$, $p = .017$). No other demographic variable including gender, occupation, area of residence, monthly household income, marital status, duration of association, or average days volunteered annually showed a statistically significant association with community participation level ($p > .05$ in all cases). This pattern suggests that community engagement among Civil Defence volunteers is largely uniform across social and economic groups, with age and experience being the primary determinant of participation depth. These findings

reinforce the intrinsic and values-driven nature of volunteer community engagement described throughout this chapter.

4.5 Objective 3: To Identify Factors Influencing Active Participation and Performance of Volunteers

The third objective examined the psychological, attitudinal, and structural factors that influence volunteer participation and performance. Four items in Section E assessed volunteering attitude, professional identity, reflective practice, and the structural concern of insurance absence.

Table 4.16: Descriptive Statistics Volunteering Attitude and Factors (Section E)

Table 0-16

Item	N	Min.	Max.	Mean	SD
I prioritise volunteering duties over personal leisure activities	89	1.00	5.00	4.33	1.00
I reflect on how to improve my disaster response skills	89	1.00	5.00	4.46	0.88
I feel proud when wearing my Civil Defence uniform	89	1.00	5.00	4.63	0.99
Lack of insurance or financial reimbursement affects my level of involvement	89	1.00	5.00	4.10	1.31
Composite Mean Score (Section E)	89			4.38	0.73

Note: Scale: 1 = Never to 5 = Always. Source: SPSS Output.

Table 4.16 presents the descriptive statistics for volunteering attitude and related factors. The composite mean of 4.38 (SD = 0.73) indicates a 'Very Good' level of positive volunteering attitude among respondents. The item on pride in wearing the Civil Defence uniform

recorded the highest mean score ($M = 4.63$, $SD = 0.99$), placing it in the 'Very Good' range. This indicates that the uniform as a symbol of professional identity, institutional belonging, and public trust is a powerful source of psychological satisfaction and social recognition for volunteers. This finding directly contradicts the low raw frequency scores observed in the earlier version of the data and is more accurately interpreted through the SPSS recoded scale: volunteers feel strongly proud of their uniform identity, even as they seek improvements in uniform quality and standardisation. Reflective practice ($M = 4.46$, $SD = 0.88$) and duty prioritisation ($M = 4.33$, $SD = 1.00$) also scored in the 'Very Good' range, indicating that volunteers are intrinsically motivated to prioritise their service and continuously improve their professional competence.

The item on lack of insurance or financial reimbursement ($M = 4.10$, $SD = 1.31$) scored in the 'Good' range, with the highest standard deviation ($SD = 1.31$) of all items in the section. This variability indicates that while many volunteers are significantly affected by the absence of insurance cover, others are less affected possibly reflecting differences in risk exposure by deployment type, geographic area, or personal financial security. The statistically significant negative correlation between insurance absence and commitment variables (discussed in the previous chapter's correlation analysis and confirmed by respondent qualitative feedback) suggests this is a critical structural gap requiring policy attention, even though mean perceptions of its impact remain moderate. These findings resonate with Mishra and Sharma (2023), who found that structural vulnerabilities such as inadequate insurance coverage significantly undermine long-term volunteer commitment in Indian disaster management programmes.

Table 4.16a: Level of Volunteering Attitude Frequency Distribution

Table 0-17

Category	Frequency	Percentage (%)
Unfair	2	2.2
Fair	14	15.7
Good	73	82.0

Total	89	100.0
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Note: N = 89. Composite score recoded into three levels based on SPSS output: Unfair, Fair, Good.

Table 4.16a presents the distribution of volunteers across three levels of volunteering attitude. An overwhelming majority of respondents (82.0%, n = 73) demonstrated a high (positive) level of volunteering attitude, while 15.7% (n = 14) showed a moderate attitude, and only 2.2% (n = 2) reported a low or unfavourable attitude. This near-uniform distribution at the high end of the scale is consistent with the composite mean of 4.38 reported in Table 4.16, confirming that Civil Defence volunteers in Thiruvananthapuram district are overwhelmingly positively oriented towards their volunteering responsibilities.

Table 4.16b: Chi-Square Test Summary Level of Volunteering Attitude by Demographic Variables

Table 0-18

Demographic Variable	Df	χ^2	p-value	Significant
Age	6	5.214	.516	No
Gender	2	1.843	.398	No
Occupation	8	8.107	.423	No
Area of Residence	4	4.892	.298	No
Monthly Household Income	4	5.103	.277	No
Marital Status	2	0.107	.948	No
Duration of Association	6	3.876	.693	No

Avg.	Days	Volunteered	8	7.214	.513	No
Annually						

Note: N = 89. No demographic variable yielded a statistically significant association ($p > .05$). Caution: Several cells have expected counts less than 5 due to small group sizes in the Low category.

Table 4.16b presents the chi-square test results for the association between volunteering attitude level and all eight demographic variables. None of the demographic variables including age, gender, occupation, area of residence, monthly household income, marital status, duration of association, or average days volunteered annually showed a statistically significant association with volunteering attitude level ($p > .05$ in all cases). This is a substantively important finding: it indicates that the high level of positive volunteering attitude observed in this study is not confined to any particular demographic subgroup but is uniformly distributed across the volunteer population. Regardless of age, gender, economic background, or length of service, Civil Defence volunteers in Thiruvananthapuram district demonstrate consistently strong commitment and positive attitude toward their roles. This universality of positive attitude underscores the deeply values-driven and intrinsically motivated character of volunteer participation, as theorised by Clary et al. (1998) in the Functional Theory of Volunteerism.

4.6 Objective 4: To Understand the Level of Operational Readiness among Civil Defence Volunteers

The fourth objective assessed the operational readiness of Civil Defence volunteers through four items measuring preparedness instruction receipt, role clarity during emergencies, leadership in mock drills, and demonstration of technical skills.

Table 4.17: Descriptive Statistics Disaster Preparedness and Operational Readiness (Section G)

Table 0-19

Item	N	Min.	Max.	Mean	SD
Received disaster preparedness instructions during the past 12 months	89	1.00	5.00	4.34	1.01
Informed about specific roles during emergency situations	89	1.00	5.00	4.48	1.06
Assumed a leadership or supervisory role during inter-agency mock drills	89	1.00	5.00	4.02	1.19
Demonstrated high-proficiency technical skills during emergency response operations	89	1.00	5.00	4.15	1.03
Composite Mean Score (Section G)	89			4.25	0.81

Note: Scale: 1 = Never to 5 = Always. Source: SPSS Output.

Table 4.17 presents the descriptive statistics for disaster preparedness and operational readiness. The composite mean of 4.25 (SD = 0.81) falls in the 'Very Good' range, indicating that respondents, on the whole, report a high level of operational readiness. Role clarity during emergency situations received the highest individual score (M = 4.48, SD = 1.06), suggesting that volunteers generally have a clear understanding of their responsibilities during disaster deployments. This is a positive finding given that role ambiguity during emergencies can critically impair coordinated response effectiveness.

Preparedness instruction receipt over the past 12 months (M = 4.34, SD = 1.01) and technical skill demonstration (M = 4.15, SD = 1.03) also scored in the 'Good' to 'Very Good' range. The lowest score in the section was for leadership role assumption during inter-agency mock drills (M = 4.02, SD = 1.19), which, while still 'Good,' suggests that opportunities for volunteers to exercise leadership in multi-agency settings are comparatively less frequent.

The higher standard deviation on this item may reflect differences in the availability and frequency of inter-agency drill exercises across different fire stations in the district. Leadership development through mock drills is a recognised best practice in community disaster volunteer programmes (UNDRR, 2015), and expanding such opportunities would strengthen both individual confidence and system-level coordination.

Table 4.17a: Level of Disaster Preparedness Frequency Distribution

Table 0-20

Category	Frequency	Percentage (%)	Cumulative (%)
Low (Score 1)	4	4.5	4.5
Moderate (Score 2)	17	19.3	23.9
High (Score 3)	68	76.1	100.0
Total	89	98.9	

Note: N = 89. Composite score recoded into three levels: Low (1), Moderate (2), High (3).

Table 4.17a presents the distribution of volunteers across three levels of disaster preparedness and operational readiness. The majority of respondents (76.1%, n = 68) reported a high level of preparedness, while 19.3% (n = 17) reported moderate preparedness, and 4.5% (n = 4) reported a low level. One respondent had a missing value on this variable. These findings are consistent with the composite mean of 4.25 reported in Table 4.17 and confirm that operational readiness among Civil Defence volunteers is predominantly high across the sample.

Table 4.17b: Chi-Square Test Summary Level of Disaster Preparedness by Demographic Variables

Table 0-21

Demographic Variable	Df	χ^2	p-value	Significant
Age	6	7.061	.315	No
Gender	2	.616	.735	No
Occupation	8	4.865	.772	No
Area of Residence	4	9.057	.060	No
Monthly Household Income	4	8.005	.091	No
Marital Status	2	2.093	.351	No
Duration of Association	6	9.030	.172	No
Avg. Days Volunteered Annually	8	3.075	.930	No

Note: N = 89. No demographic variable yielded a statistically significant association ($p > .05$). Area of Residence approaches significance ($p = .060$) but does not meet the conventional threshold..

Table 4.17b presents the chi-square test results for the association between disaster preparedness level and all eight demographic variables. None of the variables yielded a statistically significant result ($p > .05$ in all cases). Notably, area of residence approaches but does not reach significance ($\chi^2(4) = 9.057$, $p = .060$), suggesting a possible trend whereby urban volunteers may report slightly higher preparedness levels a pattern consistent with the significant urban-rural difference observed for programme effectiveness (Table 4.12). Duration of association also produced a moderately sized chi-square value ($\chi^2(6) = 9.030$, p

= .172), indicating a non-significant but directionally consistent trend where longer-serving volunteers tend to report higher operational readiness. The overall absence of significant demographic associations suggests that disaster preparedness among Civil Defence volunteers is broadly uniform across the population a positive finding indicating that the programme's training and readiness activities are reaching volunteers equitably across demographic groups.

4.7 Satisfaction, Happiness, and Psychological Well-being of Volunteers

Section F assessed volunteer psychological well-being through four items measuring personal satisfaction, happiness, sense of purpose, and quality of life, using a four-point scale (1 = Strongly Disagree to 4 = Agree). These items capture the subjective well-being outcomes associated with Civil Defence volunteering.

Table 4.18: Descriptive Statistics Satisfaction and Psychological Well-being (Section F)

Table 0-22

Item	N	Min.	Max.	Mean	SD
Sense of personal satisfaction after completing a disaster response mission	89	1.00	4.00	3.85	0.55
Being part of this programme has increased my overall sense of happiness	89	1.00	4.00	3.85	0.49
Volunteering gives me a greater purpose in life	89	3.00	4.00	3.96	0.21
Overall, satisfied with quality of life as a Civil Defence volunteer	89	3.00	4.00	3.96	0.21

Item	N	Min.	Max.	Mean	SD
Composite Mean Score (Section F)	89			3.90	0.24

Note: Scale: 1 = Strongly Disagree to 4 = Agree.

Table 4.18 reveals a striking pattern: the composite mean for psychological well-being is 3.90 (SD = 0.24), which approaches the maximum of the four-point scale and indicates near-universal agreement among volunteers that Civil Defence service enhances their personal well-being, happiness, and sense of purpose. The items on purpose in life and quality of life satisfaction both recorded means of 3.96 with minimal variance (SD = 0.21 each), meaning that almost all respondents agree or strongly agree that volunteering gives their lives greater purpose and improves their overall quality of life. These are the highest-scoring items in the entire study.

The high well-being scores exist in productive tension with the structural challenges identified in programme management and community participation sections. The Functional Theory of Volunteerism (Clary et al., 1998) provides a robust explanation: volunteers participate because the activity fulfils deep psychological functions expressing humanitarian values, gaining purpose, enhancing self-esteem, and building social identity. These intrinsic psychological functions appear to be strongly met through Civil Defence service in Thiruvananthapuram, even in the presence of structural deficiencies. The very low standard deviations for purpose and quality of life items (SD = 0.21) are particularly noteworthy: they indicate an exceptionally high level of consensus among volunteers, with virtually no dissenting responses. This near-universal positive well-being experience is a significant asset for the programme and a testament to the quality of volunteer motivation, even if it should not be interpreted as evidence that structural improvements are unnecessary.

4.8.1 Improvement Suggestions (n = 35 substantive responses)

Table 4.19: Frequency of Improvement Suggestions

Table 0-23

S.N o.	Theme	Frequency (n)	% of Respondents	Representative Response
1	Uniform and Equipment Standardisation	11	31.4%	"We need uniform and boot every year because our rough activities cause our uniform to damage."
2	Regular and Practical Training & Mock Drills	13	37.1%	"Regular hands-on training and mock drills... proper refreshment courses every year."
3	Insurance, Financial Protection & Recognition	5	14.3%	"Need medical insurance, need PF... need at least travel allowance."
4	Inter-agency Coordination and Role Clarity	5	14.3%	"Better coordination with Fire & Rescue, Police, and Health Departments; clear roles."

S.N o.	Theme	Frequency (n)	% of Respondents	Representative Response
5	Public Awareness and Community Integration	9	25.7%	"Improve Govt support and give awareness about Civil Defence volunteers to the public."

Note: N = 35 (substantive responses only).

Table 4.19 presents the frequency distribution of thematic content in improvement suggestions. The most commonly cited improvement was the need for regular and practical training and mock drills (37.1%, n = 13). This was closely followed by the need for uniform and equipment standardisation (31.4%, n = 11). Awareness and community integration was cited by 25.7% (n = 9) of substantive respondents, while insurance and financial protection (14.3%, n = 5) and inter-agency coordination (14.3%, n = 5) were raised in equal measure.

The high frequency of training-related suggestions (37.1%) is analytically consistent with the programme effectiveness data, where refresher training received the highest positive scores from SPSS analysis suggesting that while training is valued, volunteers wish for greater frequency and practical depth. The uniform theme (31.4%) reveals a qualitatively important finding: volunteers' low raw scores on the 'pride in uniform' item (observed in the earlier frequency analysis) are primarily attributable to dissatisfaction with uniform quality rather than absence of professional pride. Responses such as 'We want SPO uniform type' and 'five states have better uniforms so we also need a khaki colour uniform' confirm that institutional identity through uniform quality is a meaningful dimension of volunteer morale. The insurance and financial protection theme (14.3%), though cited by fewer respondents, is amplified by the correlation data showing that insurance absence significantly depresses commitment and community trust making it disproportionately important relative to its raw frequency.

4.8.2 Motivation Responses (n = 45 substantive responses)

Table 4.20: Frequency of Motivation Responses

Table 0-24

S.N o.	Theme	Frequency (n)	% of Respond ents	Representative Response
1	Altruism and Social Service	23	51.1%	"As a human being I always wish to serve those in need Civil Defence provides me a platform for my wish."
2	Civic Duty and Social Responsibility	11	24.4%	"Social responsibility; working with a force to protect people; serving my country."
3	Skills Development and Learning	8	17.8%	"The training made me understand how to respond in an emergency situation."
4	Personal Satisfaction and Happiness	7	15.6%	"The mental happiness that I get from helping people in need."

S.N o.	Theme	Frequency (n)	% of Respond ents	Representative Response
5	Professional Identity and Institutional Pride	7	15.6%	"A proud organisation that gives the guts to perform in every emergency situation."

Note: N = 45 (substantive responses only). Multiple themes per response possible; percentages do not sum to 100.

Table 4.20 presents the frequency distribution of thematic motivations. Altruism and social service was the dominant motivating theme, cited by 51.1% (n = 23) of substantive respondents. More than half of volunteers explicitly frame their motivation in terms of helping others, serving society, and contributing to community welfare during emergencies. Civic duty and social responsibility was the second most cited theme (24.4%, n = 11), indicating that a significant proportion of volunteers conceptualise their participation as a moral and patriotic obligation. Skills development and learning motivated 17.8% (n = 8) of respondents, reflecting the understanding function of the Functional Theory of Volunteerism (Clary et al., 1998) volunteers who gain practical knowledge and emergency response capabilities from the programme. Personal satisfaction and happiness, and professional identity and institutional pride, were each cited by 15.6% (n = 7) of respondents. These themes correspond to the enhancement and social functions of volunteerism respectively.

Taken together, the motivation data reveal that volunteer commitment to Civil Defence in Thiruvananthapuram is overwhelmingly values-driven and intrinsically motivated. No respondent cited financial compensation or external incentives as a primary motivator a finding that underscores both the strength of the volunteer force and the current programme's sustainability risk. When motivation is entirely intrinsic but structural support is inadequate, the risk of eventual burnout and attrition rises significantly. This finding is consistent with Hustinx et al. (2010), who cautioned that formal volunteer programmes relying solely on intrinsic motivation without structural reinforcement are vulnerable to participant fatigue over extended periods.

4.9 Summary of Major Findings

The analysis presented in this chapter reveals a complex and multi-dimensional picture of the Civil Defence volunteer programme in Thiruvananthapuram district. The following major findings emerge from the data:

1. The socio-demographic profile shows that Civil Defence volunteers are predominantly young (26–35 years), male, rural, middle-income, private sector employees who have served for more than five years and contribute more than 60 volunteer days annually all without financial compensation. This profile indicates a committed but potentially vulnerable volunteer base.
2. Programme effectiveness (Composite $M = 4.19$) is rated 'Good' by volunteers, with refresher training and administrative support scoring particularly well. However, the annual action plan implementation item shows the lowest score and highest variability ($M = 3.43$, $SD = 1.61$), pointing to station-level inconsistencies in administrative planning.
3. A statistically significant positive correlation between programme effectiveness and age ($r = .227$, $p = .033$) indicates that older volunteers perceive programme functioning more favourably, suggesting experience-related differences in programme engagement.
4. Area of residence significantly influences programme effectiveness perceptions ($\chi^2(4) = 9.561$, $p = .049$), with urban volunteers more likely to report high effectiveness than rural or coastal peers, highlighting spatial inequities in programme delivery.
5. Community participation (Composite $M = 4.18$) is rated 'Good,' with 78.7% of volunteers reporting high participation levels. Age is significantly associated with community participation ($\chi^2(6) = 15.415$, $p = .017$), with older volunteers demonstrating deeper community engagement.
6. Volunteering attitude (Composite $M = 4.38$) is in the 'Very Good' range. Pride in uniform is the highest-scoring item ($M = 4.63$), reflecting strong professional identity, while the insurance item shows the greatest variability ($SD = 1.31$), indicating structural vulnerability.
7. Operational readiness (Composite $M = 4.25$) falls in the 'Very Good' range, with role clarity during emergencies ($M = 4.48$) as the highest-scoring item. Leadership in inter-agency mock drills is comparatively lower ($M = 4.02$), suggesting limited multi-agency exercise opportunities.

8. Psychological well-being (Composite M = 3.90 on a 4-point scale) is near-maximum, with unanimous agreement that volunteering provides purpose and quality of life. This reflects the deep intrinsic motivation sustaining the volunteer workforce.

9. The suggestions identifies regular training and mock drills (37.1%) and uniform/equipment standardisation (31.4%) as the most urgent improvement priorities. Altruism and social service (51.1%) is the dominant motivational theme, confirming the values-driven nature of volunteer participation.

4.10 Chapter Summary

This chapter analysed survey data from 89 Civil Defence volunteers in Thiruvananthapuram district across the study's four specific objectives. Programme effectiveness and community participation were both rated Good overall, but each showed statistically significant unevenness effectiveness varying by area of residence and age, and participation varying by age indicating that institutional and community-facing dimensions of the programme are experienced unequally across the volunteer population. Volunteering attitude and operational readiness, by contrast, were rated Very Good and showed no significant demographic variation, indicating that the programme's motivational and preparedness outcomes are robust and equitably distributed. Thematic analysis of open-ended responses reinforced these patterns, identifying training frequency, equipment standardisation, and insurance protection as the volunteers' own priority concerns, against a backdrop of overwhelmingly altruistic and intrinsic motivation for continued service.

Taken together, these findings depict a volunteer programme that is strong in human commitment and operational competence but uneven in its institutional and structural support a distinction with direct implications for how the programme's strengths might be consolidated and its gaps addressed. Chapter V builds on this analysis by discussing these findings in relation to the study's theoretical framework and the wider literature in greater depth, drawing conclusions in direct response to each research objective, acknowledging the methodological limitations of the present study, and presenting stakeholder-specific recommendations for strengthening the Civil Defence volunteer programme in Thiruvananthapuram district and beyond.

CHAPTER V
FINDINGS, SUGGESTIONS, AND
CONCLUSION

CHAPTER V : FINDINGS, SUGGESTIONS, AND CONCLUSION

5.1 Introduction

This chapter presents the discussion, conclusions, limitations, and recommendations arising from the data analysed in Chapter IV. The study evaluated the effectiveness of the Civil Defence Volunteer programme in Thiruvananthapuram district, with particular reference to community participation, volunteer motivation, and operational readiness. Data were collected from 89 Civil Defence volunteers using a structured questionnaire administered through Google Forms, and were analysed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (Pearson correlation and chi-square tests of independence), corresponding to the study's four specific objectives.

The discussion that follows is organised objective by objective, drawing together the statistical results presented in Chapter IV, the relevant prior literature reviewed in Chapter II, and the conceptual lens of Community Resilience Theory, within which the present study is theoretically situated. The chapter then states the study's conclusions in direct response to its research objectives, acknowledges the methodological limitations that bear on the interpretation of these conclusions, and closes with recommendations addressed to specific stakeholders, together with directions for future research.

5.2 Summary of Findings

The study was conducted to evaluate the effectiveness of the Civil Defence Volunteer programme in enhancing community participation in Thiruvananthapuram district through four specific objectives: evaluating programme effectiveness and training, examining community participation, identifying factors influencing volunteer participation and performance, and assessing operational readiness.

A quantitative evaluative research design was adopted, and 89 valid responses from trained Civil Defence Volunteers who were trainee in the first three batches were analyzed. The sample consisted predominantly of working-age, male volunteers from rural areas, most of whom had served in the programme for several years and contributed substantial unpaid volunteer service annually, reflecting a strong level of commitment. Across the four major

constructs measured on a five-point scale, volunteering attitude ($M = 4.38$) and operational readiness ($M = 4.25$) were rated at a Very Good level, while programme effectiveness ($M = 4.19$) and community participation ($M = 4.18$) were rated at a Good level. This overall pattern indicates that volunteers demonstrated high levels of motivation and preparedness, while organisational and community-level dimensions, although positively evaluated, showed comparatively greater scope for improvement. The objective-wise findings are summarised below, with detailed descriptive and inferential analyses presented in Chapter IV.

5.2.1 Objective 1: Programme Effectiveness and Training

Programme effectiveness was rated favourably overall. Refresher training and administrative support were the most positively rated components, while implementation of annual action plans was both the weakest-rated element and the one on which volunteer opinion varied most. Effectiveness ratings were significantly related to volunteer age and to area of residence, with urban volunteers reporting distinctly higher effectiveness than their rural counterparts.

5.2.2 Objective 2: Community Participation

Community participation was rated Good overall, with volunteers demonstrating strong engagement in disseminating disaster-related information among their families and local communities. However, support from community organisations, particularly in terms of logistical assistance, was comparatively weaker, indicating an area requiring greater institutional collaboration. The findings also showed that community participation varied across age groups, with the highest levels of engagement observed among volunteers in the 36–45-year age group. This suggests that greater life experience and sustained involvement in the programme may contribute to stronger community engagement.

5.2.3 Objective 3: Factors Influencing Volunteer Participation and Performance

Volunteering attitude emerged as the most positively rated of the four constructs, reflecting

a strong sense of pride, commitment, and identification with the Civil Defence programme. This positive attitude remained consistent across all demographic groups, indicating broad-based commitment among volunteers irrespective of their personal characteristics. Volunteers also reported substantial psychological benefits from their service, with many expressing that volunteering enhanced their sense of purpose and overall well-being. Open-ended responses further reinforced these findings, identifying altruism and social service as the primary motivations for continued volunteering, while none of the respondents cited financial reward as a motivating factor. At the same time, concerns regarding the absence of insurance coverage and financial reimbursement were evident, suggesting an area that warrants policy attention.

5.2.4 Objective 4: Disaster Preparedness and Operational Readiness

Operational readiness was rated at a Very Good level, indicating that volunteers generally perceived themselves as well prepared to respond during emergencies. Role clarity during disaster situations emerged as the strongest aspect of operational readiness, while leadership in inter-agency mock drills was comparatively weaker, suggesting scope for strengthening collaborative disaster response exercises. Operational readiness remained consistent across different demographic groups, although volunteers from urban and rural areas showed slight variations similar to those observed for programme effectiveness.

5.3 Discussion of Findings

The pattern that emerges across the four objectives is best understood through Community Resilience Theory (Norris et al., 2008), which conceptualises resilience as a function of interconnected community capacities economic development, social capital, information and communication, and community competence that together determine a community's ability to anticipate, withstand, and recover from adversity. Applied to the present findings, the Civil Defence volunteer programme in Thiruvananthapuram displays markedly stronger human and relational capacities than institutional or structural capacities, a distinction that runs through every objective examined in this study.

5.3.1 Programme Effectiveness as Institutional Capacity

The findings indicate that the Civil Defence Volunteer programme is generally effective in supporting disaster preparedness and volunteer functioning. Positive perceptions of refresher training and administrative support suggest that the programme has established a sound foundation for volunteer development. However, variations in programme effectiveness across areas of residence and inconsistent implementation of annual action plans indicate that institutional support is not experienced uniformly by all volunteers. This suggests that the programme's effectiveness depends not only on its design but also on the consistency with which it is implemented at the local level.

These findings are consistent with Rajan and James (2022), who reported that variations in the implementation of Civil Defence programmes across India are largely influenced by differences in administrative coordination and monitoring. Similarly, studies on disaster management in Kerala have emphasised that regular training, effective leadership, and institutional coordination are essential for maintaining volunteer preparedness and programme effectiveness. The present study extends these findings by demonstrating that even within a single district, disparities in programme implementation can influence volunteers' perceptions of effectiveness.

However, the findings differ from those of Nair and Thomas (2021), who reported relatively uniform institutional support across disaster volunteer programmes in Kerala, attributing this to the state's decentralised disaster management system and active involvement of local self-government institutions. The inconsistency observed in the present study suggests that such institutional strengths may not be equally reflected across all Civil Defence units in Thiruvananthapuram district. This indicates that local administrative practices and operational management may play a greater role in shaping programme effectiveness than broader policy frameworks alone.

Viewed through the lens of Community Resilience Theory (Norris et al., 2008), these findings highlight the importance of institutional capacity in strengthening community resilience. While the programme demonstrates a strong organisational foundation, improving the consistency of implementation, monitoring mechanisms, and coordination across operational units would further enhance its effectiveness and ensure a more equitable experience for volunteers throughout the district.

5.3.2 Community Participation as Social Capital in Practice

Community participation was rated positively, indicating that Civil Defence Volunteers actively contribute to strengthening disaster awareness and preparedness within their local communities. The high level of information-sharing with family members and community residents suggests that volunteers function as important channels for disseminating disaster-related knowledge and promoting community preparedness. However, comparatively lower ratings for logistical support from community organisations indicate that collaboration between the Civil Defence programme and local institutions remains less developed. These findings imply that while community engagement is strong at the interpersonal level, it has yet to be translated into sustained institutional partnerships that could further strengthen community-based disaster management.

These findings are consistent with those of Krishnakumar and Indira (2020), who reported that community participation in Kerala's disaster response is largely driven by local networks, volunteer initiatives, and informal community support rather than structured organisational collaboration. Similarly, studies by Joseph and Anand (2020) on the Kerala floods highlighted that community resilience was strengthened through social cohesion, mutual trust, and local participation, demonstrating the critical role of social capital in disaster response. The present study reinforces these observations by showing that volunteers maintain strong relationships with community members and actively engage in awareness-building activities.

In contrast, Thomas and Pillai (2021) found that disaster preparedness initiatives implemented through local self-government institutions and neighbourhood groups achieved stronger institutional participation and more formal community partnerships than those observed in the present study. This difference suggests that although Kerala possesses well-established community institutions capable of supporting disaster management, such institutional linkages are not yet fully integrated into the Civil Defence Volunteer programme in Thiruvananthapuram district. Strengthening collaboration with local self-government bodies, resident associations, and community-based organisations could therefore enhance both programme visibility and community participation.

The findings also indicate that community participation was higher among volunteers in the middle-age group than among younger volunteers. This pattern suggests that sustained engagement, greater social experience, and stronger community networks may enable

volunteers to establish deeper relationships with local communities over time. From the perspective of Community Resilience Theory, these findings demonstrate that social capital develops through continued interaction, trust-building, and active community engagement rather than through training alone. Strengthening institutional partnerships alongside these existing interpersonal networks would therefore further enhance the programme's contribution to community resilience and disaster preparedness.

5.3.3 Volunteer Motivation and the Resilience of the Human Resource Base

Among all the dimensions examined in this study, volunteer motivation emerged as the programme's greatest strength. The consistently positive volunteering attitude observed across respondents reflects a strong culture of service, characterised by commitment, pride, and a willingness to contribute despite the absence of financial incentives. The absence of significant differences across demographic groups further suggests that this commitment is widely shared among volunteers rather than being confined to particular age groups, occupations, or socioeconomic backgrounds. Such uniformity is particularly important for volunteer-based disaster management programmes, where sustained engagement is essential for long-term organisational effectiveness.

The predominance of altruism and social service as the principal motivations, together with the psychological benefits reported by volunteers, indicates that participation is driven primarily by intrinsic rather than extrinsic factors. These findings reinforce the work of Hustinx et al. (2010), who argued that contemporary volunteerism is increasingly sustained by personal values, civic responsibility, and self-fulfilment rather than material rewards. Similar observations have been reported in studies of disaster volunteers in Kerala, where commitment to community welfare and humanitarian service has been identified as a major factor influencing continued volunteer engagement.

Not all studies, however, have reported such consistent patterns of motivation. Bhattacharya and Roy (2019) found that volunteers from economically disadvantaged backgrounds were more likely to consider financial and career-related benefits alongside altruistic motives. Likewise, Mishra and Sharma (2023) observed that concerns regarding insurance protection and financial security could weaken volunteer retention over time if left unaddressed. Although financial reward did not emerge as a motivating factor in the present study,

respondents did express concern regarding the absence of insurance coverage and reimbursement during service. This suggests that while intrinsic motivation currently sustains volunteer participation, supportive welfare measures remain important for ensuring long-term volunteer retention and safeguarding those who undertake disaster response responsibilities.

From the perspective of Community Resilience Theory (Norris et al., 2008), motivated volunteers represent a critical community resource that enhances resilience by strengthening collective action and civic engagement. The findings therefore suggest that the Civil Defence Volunteer programme possesses a stable and committed human resource base. Preserving this strength will require not only continued recognition of volunteers' contributions but also institutional measures that acknowledge and protect their welfare, thereby ensuring that intrinsic commitment is reinforced rather than taken for granted.

5.3.4 Operational Readiness and Absorptive Capacity

The effectiveness of any disaster volunteer programme is ultimately reflected in the preparedness of its volunteers to respond during emergencies. In this regard, the present study demonstrates that Civil Defence Volunteers in Thiruvananthapuram district perceive themselves to be well prepared to perform their assigned roles during disaster situations. Clear understanding of responsibilities during emergencies emerged as a notable strength, reflecting the contribution of training and practical exposure in building volunteer confidence. At the same time, comparatively lower ratings for leadership in inter-agency mock drills indicate that opportunities to develop advanced coordination and leadership competencies remain relatively limited.

These findings are comparable with those reported by Kumar et al. (2022), who found that regular training and simulation exercises significantly improve disaster preparedness and response capacity among volunteers. Likewise, Joseph and Anand (2020), in their study of community resilience during the 2018 Kerala floods, emphasised that preparedness, role clarity, and coordinated community response are fundamental to effective disaster management. The present findings reinforce this evidence by suggesting that volunteers possess the knowledge and confidence required for routine emergency response.

A different perspective is offered by Sharma and Verma (2021), who reported considerable disparities in preparedness among disaster volunteers due to variations in training quality,

resource availability, and organisational support. Similarly, studies conducted in other Indian states have identified gender- and locality-based differences in disaster preparedness, with unequal access to training contributing to inconsistent operational performance. Such disparities were not evident in the present study, indicating that the Civil Defence Volunteer programme has largely succeeded in providing equitable preparedness across its volunteer base. This consistency may be attributed to the standardised training structure and operational procedures followed within the programme.

Beyond individual preparedness, operational readiness also reflects the programme's capacity to respond collectively during emergencies. The comparatively weaker performance in inter-agency leadership suggests that future training should extend beyond individual competencies to include greater exposure to multi-agency coordination, incident command systems, and collaborative disaster simulations. Strengthening these aspects would enhance the programme's ability to respond effectively to complex emergencies that require coordinated action among multiple departments and agencies.

Viewed in the context of Community Resilience Theory (Norris et al., 2008), these findings demonstrate that the programme has established a strong foundation of operational capacity among its volunteers. Building on this strength through enhanced collaborative training and leadership development would further improve the programme's contribution to community resilience and disaster preparedness.

5.3.5 Synthesis: An Asymmetric Resilience Profile

When considered collectively, the findings present a balanced picture of the Civil Defence Volunteer programme in Thiruvananthapuram district. The programme demonstrates considerable strength in developing committed volunteers who possess positive attitudes towards service, strong operational readiness, and meaningful engagement with their communities. These findings indicate that the programme has been successful in building a motivated and capable volunteer workforce that can contribute effectively to disaster preparedness and emergency response.

At the same time, the study shows that organisational and community-level processes have not progressed to the same extent as volunteer capacity. Variations in programme

implementation across operational units and comparatively weaker institutional collaboration with community organization suggest that the programme's overall effectiveness is influenced not only by the commitment of volunteers but also by the consistency of administrative support and the strength of local partnerships. This distinction is particularly significant because disaster risk reduction increasingly depends on coordinated action among government agencies, volunteers, local self-government institutions, and community-based organization rather than on individual efforts alone.

The findings both support and extend existing research on disaster volunteerism in Kerala. Consistent with earlier studies, the programme benefits from volunteers who are intrinsically motivated and actively involved in promoting community preparedness. However, the study also identifies context-specific institutional challenges that are not uniformly reported in previous research, particularly the uneven implementation of programme activities and limited organisational linkages within certain local contexts. These observations demonstrate that while Kerala's disaster management system provides a favourable environment for volunteer participation, programme effectiveness ultimately depends on how consistently these broader policy frameworks are translated into practice at the operational level.

Viewed through the lens of Community Resilience Theory (Norris et al., 2008), the findings suggest that resilience is strengthened when individual commitment is supported by effective institutions, collaborative community networks, and sustained organisational capacity. The Civil Defence Volunteer programme already possesses a strong foundation in terms of volunteer motivation and preparedness. Strengthening institutional coordination, expanding partnerships with community organisations, and ensuring greater consistency in programme implementation would enable these existing strengths to translate more effectively into enhanced community resilience and disaster preparedness. The study therefore concludes that the programme is not constrained by a lack of volunteer commitment, but by the need to further strengthen the institutional mechanisms that support and sustain volunteer engagement.

5.4 Conclusions

The present study sought to evaluate the effectiveness of the Civil Defence Volunteer programme in enhancing community participation in Thiruvananthapuram district. Rather than examining the programme solely as a disaster management initiative, the study explored its role as a community-based mechanism through which trained volunteers contribute to disaster preparedness, community participation, and local resilience. The findings demonstrate that the programme has developed a committed volunteer base capable of supporting both emergency response and sustained community engagement, thereby reaffirming the continuing relevance of volunteer-based disaster management within the district.

At the same time, the study provides a broader understanding of programme effectiveness by showing that successful disaster preparedness depends on more than volunteer commitment alone. While volunteers have demonstrated strong motivation, preparedness, and meaningful engagement with their communities, the full potential of these strengths can be realised only when they are supported by consistent programme implementation, effective institutional coordination, and stronger collaboration with community organisations. The study therefore highlights the importance of viewing volunteer capacity and institutional capacity as complementary dimensions of programme effectiveness rather than as independent components.

The evaluation further demonstrates that community participation within the Civil Defence Volunteer programme extends beyond emergency response activities. Through awareness creation, information sharing, and sustained interaction with local communities, volunteers contribute to strengthening social connectedness and preparedness at the grassroots level. Building stronger partnerships between the Civil Defence system, local self-government institutions, community-based organisations, and other stakeholders would enable these community relationships to become more structured, sustainable, and effective in supporting disaster risk reduction.

From a social work perspective, the findings reaffirm the importance of community participation, collective responsibility, and institutional collaboration in building resilient communities. The study highlights the potential role of social work professionals in strengthening volunteer development, facilitating community mobilisation, promoting inter-agency collaboration, advocating for volunteer welfare, and supporting participatory

approaches to disaster management. These contributions are essential for ensuring that volunteer-based programmes continue to respond effectively to the evolving challenges of disaster risk reduction.

The significance of this study lies not only in evaluating the current effectiveness of the Civil Defence Volunteer programme but also in providing evidence that can guide its future development. By identifying both the programme's strengths and the institutional factors influencing its effectiveness, the study offers practical insights for programme administrators, disaster management authorities, policymakers, and social work practitioners seeking to strengthen volunteer management and community-centred disaster preparedness. It is expected that the findings will contribute to ongoing efforts to enhance the Civil Defence Volunteer programme in Thiruvananthapuram district and provide a useful foundation for future research on volunteer-based disaster management and community resilience in Kerala.

5.5 Limitations

As with any single study, the findings reported here should be interpreted in light of several methodological limitations.

- **Geographic scope.** The study was confined to Civil Defence volunteers registered in Thiruvananthapuram district. Findings, particularly those concerning the urban–rural disparity in programme effectiveness, may not generalise to other districts of Kerala or to Civil Defence programmes in other states, where institutional arrangements and resource availability may differ.
- **Sample size and composition.** The retained sample of 89 respondents, while adequate for the statistical procedures employed, is modest in absolute terms and was obtained through simple random sampling restricted to volunteers who had completed training in the first three batches and served for at least one year. This sampling frame, by design, excludes more recently recruited and less experienced volunteers, whose perspectives may differ from those captured in this study.

- **Self-reported data.** All data were collected through a self-administered questionnaire, which is subject to social desirability bias and recall bias. Volunteers may have rated programme effectiveness, their own preparedness, or community participation more favourably than an independent, observation-based assessment would indicate, particularly given the strong identity-based pride in the Civil Defence role evident in the attitudinal findings.
- **Cross-sectional design.** The study captured volunteer perceptions at a single point in time, which permits the identification of associations but not of causal direction or change over time. The observed relationship between duration of association and community participation level, for example, cannot establish whether longer-serving volunteers participate more because of accumulated experience, or whether volunteers who participate more are simply more likely to remain in the programme for longer.
- **Reliance on quantitative measurement of inherently qualitative constructs.** Constructs such as community participation and programme effectiveness were operationalised through composite scale scores, which, while statistically tractable, may not fully capture the contextual nuance of volunteers' lived experience. The thematic analysis of open-ended responses in Chapter IV partially addressed this limitation, but the qualitative component of the study remained subsidiary to its primarily quantitative design.

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5.6 Recommendations

The following recommendations follow directly from the conclusions above and are addressed to the specific stakeholders best positioned to act on them.

5.6.1 Recommendations for the Kerala State Disaster Management Authority and Fire and Rescue Services

- **Standardise action-plan implementation across stations.** Given the high variability observed in ratings of annual action plan implementation, KSDMA and Fire and Rescue Services should institute a standard, monitored protocol

for translating annual plans into station-level activity schedules, with periodic compliance review, to reduce the disparity currently observed between urban and rural stations.

- **Strengthen rural outreach and institutional support.** Since programme effectiveness was rated significantly lower by rural volunteers, targeted attention including more frequent supervisory visits, dedicated rural coordination staff, or resource allocation weighted toward rural stations should be directed toward closing this gap.
- **Formalise volunteer insurance and reimbursement mechanisms.** The relatively high and variable concern expressed over the absence of insurance or financial reimbursement indicates a tangible institutional gap. Establishing a standard accident and health insurance scheme, along with reimbursement for direct out-of-pocket costs incurred during deployments, would address a concrete and specific need without altering the voluntary, unpaid nature of the service that volunteers themselves value.
- **Expand inter-agency mock drills with rotating leadership roles.** To address the identified gap in leadership exposure during inter-agency exercises, mock drills should be restructured to rotate command and coordination responsibilities among volunteers, rather than concentrating these roles among a smaller group of senior personnel.

5.6.2 Recommendations for Local Self-Government Institutions and Community-Based Organisations

- **Formalise partnerships with community organisations.** Given that logistical support from community organisations was the weakest-rated item within community participation, Panchayati Raj Institutions, Urban Local Bodies, and registered community-based organisations should establish formal memoranda of understanding with local Civil Defence units, converting currently informal goodwill into structured logistical and resource-sharing arrangements.

- **Recognise and publicise volunteer contributions.** Local self-government bodies should institute formal public recognition mechanisms such as annual felicitation events or public acknowledgement during community functions to reinforce the strong sense of pride and purpose that volunteers already report, while extending this recognition beyond the volunteer's immediate circle to the wider community.

5.6.3 Recommendations for Civil Defence Station-Level Leadership

- **Target retention efforts toward younger and newer volunteers.** Since community participation was found to deepen significantly with age and tenure, station-level leadership should design structured mentorship pairings between experienced and newer volunteers, with the explicit goal of accelerating the newer volunteers' integration into community-facing activities.
- **Address the Communication and Logistics training gap.** Completion of the Communication and Logistics training module was markedly lower than other core modules; station-level training calendars should prioritise scheduling this module to bring its completion rate in line with Medical First Aid, Fire Fighting, Search and Rescue, and Flood Rescue.
- **Increase the frequency of practical, scenario-based training.** Volunteers' own most frequently cited improvement suggestion was a call for more regular and practically oriented training and mock drills; this volunteer-identified priority should be treated as a direct input into station-level training scheduling.

5.6.4 Directions for Future Research

- **Multi-district and comparative studies.** Future research should extend this evaluation to other districts of Kerala, and ideally to Civil Defence programmes in other Indian states, to determine whether the asymmetry between strong volunteer motivation and uneven institutional support observed in

Thiruvananthapuram reflects a localised pattern or a broader structural feature of community-based disaster volunteer systems.

- **Longitudinal research on volunteer retention and participation.** Given the crosssectional design of the present study, future research employing a longitudinal design would be better positioned to determine whether deeper community participation among longer-serving volunteers reflects a developmental process, a retention effect, or both.
- **Validated instrument development.** Future studies should consider developing and psychometrically validating a standardised Civil Defence volunteer effectiveness scale, building on the constructs used in the present study, to enable more rigorous comparison across districts, states, and time periods.
- **Qualitative and mixed-methods inquiry into institutional gaps.** Given that the present study identified institutional unevenness as its central constraint, future research employing in-depth interviews or focus groups with station officers and local government officials in addition to volunteers would help to explain the specific administrative and resource factors underlying the urban–rural disparity in programme effectiveness identified here.
- **Evaluation of inter-agency coordination structures.** Future studies could examine, in greater depth, the specific mechanisms through which Civil Defence volunteers coordinate with Fire and Rescue Services, local self-government institutions, and other disaster management agencies, building on the leadership-exposure gap identified in the present study's operational readiness findings.

5.7 Chapter Summary

This chapter discussed the findings of the study in relation to Community Resilience Theory and the wider literature on civil defence and disaster volunteerism, concluding that the Civil Defence Volunteer programme in Thiruvananthapuram district is sustained by a strong, equitably distributed foundation of volunteer motivation and operational readiness, but constrained by institutional and structural unevenness in programme effectiveness and

formal community partnership, particularly along an urban–rural axis. Having acknowledged the methodological limitations bearing on these conclusions, the chapter presented a set of stakeholder-specific recommendations addressed to the Kerala State Disaster Management Authority and Fire and Rescue Services, local self-government institutions and community-based organisations, and Civil Defence station-level leadership, together with directions for future research. Collectively, these findings and recommendations affirm the considerable strength of Kerala's Civil Defence volunteer base while identifying clear, actionable pathways for consolidating it into a more consistently effective and resilient community-based disaster management system.

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ANNEXURE

QUESTIONNAIRE - ENGLISH

SECTION A: SOCIO-DEMOGRAPHIC PROFILE

1. Age Group: ☐ 18–25 ☐ 26–35 ☐ 36–45 ☐ 46–55 ☐ Above 55
2. Gender: ☐ Male ☐ Female ☐ Other
3. Occupation: ☐ Student ☐ Daily Wage Worker ☐ Private Sector ☐ Government Sector
☐ Self-Employed
4. Area of Residence: ☐ Urban ☐ Semi-Urban ☐ Rural
5. Monthly Household Income: ☐ Low ☐ Middle ☐ High
6. Marital Status: ☐ Single ☐ Married ☐ Divorced / Widowed

SECTION B: VOLUNTEERING PROFILE

7. Duration of Association: ☐ 4Years ☐ 5 Years ☐ More than 5 Years
8. Average Number of Days Volunteered Annually: ☐ Less than 20 ☐ 21–40 ☐ 41–60 ☐ More than 60
9. Specialised Training Completed (Tick all that apply):
- ☐ Medical First Aid ☐ Fire Fighting ☐ Flood Rescue ☐ Search & Rescue ☐ Communication / Logistics

SECTION C: PROGRAMME EFFECTIVENESS (Scale: 1=Never to 5=Always)

Scale: 1 = Never | 2 = Rarely | 3 = Sometimes | 4 = Often | 5 = Always

Statement	1	2	3	4	5
The unit's annual action plans were implemented without administrative delays.	☐	☐	☐	☐	☐

Volunteers were informed in advance about activities or duties.	☐	☐	☐	☐	☐
Coordination meetings took place during programme activities.	☐	☐	☐	☐	☐
Written Standard Operating Procedures (SOPs) were provided prior to field operations.	☐	☐	☐	☐	☐

SECTION D: COMMUNITY PARTICIPATION & SOCIAL ACCEPTANCE (Scale: 1=Never to 5=Always)

Scale: 1 = Never | 2 = Rarely | 3 = Sometimes | 4 = Often | 5 = Always

Statement	1	2	3	4	5
Community members were present during Civil Defence activities.	☐	☐	☐	☐	☐
I interacted with local residents during preparedness activities.	☐	☐	☐	☐	☐
Local community organizations provided logistical support during activities.	☐	☐	☐	☐	☐
Community members show respect or appreciation for my role as a volunteer.	☐	☐	☐	☐	☐

SECTION E: VOLUNTEERING ATTITUDE & PERSONAL REFLECTION (Scale: 1=Never to 5=Always)

Scale: 1 = Never | 2 = Rarely | 3 = Sometimes | 4 = Often | 5 = Always

Statement	1	2	3	4	5
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I prioritise volunteering duties over personal leisure activities.	☐	☐	☐	☐	☐
I reflect on how to improve my disaster response skills.	☐	☐	☐	☐	☐
I feel proud when wearing my Civil Defence uniform or insignia.	☐	☐	☐	☐	☐
A lack of insurance or financial reimbursement affects my level of involvement.	☐	☐	☐	☐	☐

SECTION F: SATISFACTION & HAPPINESS (Scale: 1=Strongly Disagree to 5=Strongly Agree)

1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Statement	1	2	3	4	5
I feel a deep sense of personal satisfaction after completing a disaster response mission.	☐	☐	☐	☐	☐
Being part of this programme has increased my overall sense of happiness.	☐	☐	☐	☐	☐
My volunteering gives me a greater purpose in life.	☐	☐	☐	☐	☐
Overall, I am satisfied with my quality of life as a Civil Defence volunteer.	☐	☐	☐	☐	☐

SECTION G: DISASTER PREPAREDNESS LEVEL (Scale: 1=Never to 5=Always)

Scale: 1 = Never | 2 = Rarely | 3 = Sometimes | 4 = Often | 5 = Always

Statement	1	2	3	4	5
I received disaster preparedness instructions during the past 12 months.	☐	☐	☐	☐	☐
I was informed about my specific roles during emergency situations.	☐	☐	☐	☐	☐
I assumed a leadership or supervisory role during inter-agency mock drills.	☐	☐	☐	☐	☐
I demonstrated high-proficiency technical skills during actual emergency response operations.	☐	☐	☐	☐	☐

Declaration

I voluntarily agree to participate in this study. My responses will remain confidential and will be used strictly for academic research purposes.

Date: _____

Name : _____