

Importance of Fire Prevention and Fire Safety Education among Barangay Officials of Candaba Pampanga

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Publication history: Received: May 2, 2026; Revised: May 16, 2026; Accepted: May 19, 2026

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Abstract

This study examined the importance of fire prevention and fire safety education among barangay officials in Candaba, Pampanga, with emphasis on community preparedness, governance, and disaster risk reduction. Anchored on the Knowledge, Attitude, and Practice (KAP) Theory, Cause and Effect Theory, Cognitive Flexibility Theory, Social Learning Theory, and Protection Motivation Theory, the study utilized a descriptive research design to systematically assess perceptions regarding fire prevention and fire safety activities. The respondents consisted of 264 barangay officials from the 33 barangays of Candaba, Pampanga, selected through total population sampling. Data were gathered using a validated survey questionnaire employing a four-point Likert scale and analyzed using frequency count and weighted mean. Findings revealed that fire prevention practices, house-to-house fire safety engagement, fire safety lectures and seminars, and drills and simulations were generally perceived as Somewhat Important. Barangay officials highly valued technical and structured interventions such as electrical safety measures, professional conduct during house-to-house engagement, community-based fire safety lectures, and drills in high-risk areas. However, regular implementation, follow-up actions, monitoring systems, and continuous participation were not fully prioritized, indicating a gap between awareness and actual practice. The study concluded that strengthening fire safety requires a systematic and multi-level approach integrating education, participation, drills, policy support, and collaboration with the Bureau of Fire Protection. Recommendations included regular seminars, customized lectures, annual drills, policy integration, and strengthened monitoring mechanisms to improve institutionalized fire safety practices. The study supports Sustainable Development Goal 3 on Good Health and Well-Being, Sustainable Development Goal 11 on Sustainable Cities and Communities, Sustainable Development Goal 16 on Peace, Justice, and Strong Institutions, and Sustainable Development Goal 17 on Partnerships for the Goals through the promotion of community safety, disaster preparedness, local governance, and institutional collaboration. The study contributes to sustainability by strengthening community resilience, improving public safety awareness, and supporting long-term fire prevention and disaster preparedness initiatives at the barangay level.

Keywords: Barangay Officials, Community Preparedness, Disaster Risk Reduction, Fire Prevention, Fire Safety Education, Governance, Sustainable Development

1. Introduction

Fire prevention and fire safety education are essential components of community safety and disaster preparedness, particularly in densely populated communities where fire incidents may threaten lives, properties, and socio-economic stability. Barangay officials serve as frontline local government leaders responsible for promoting public safety, disseminating emergency information, and coordinating disaster response within their communities. In Candaba, Pampanga, strengthening the knowledge and preparedness of barangay officials regarding fire prevention and fire safety education is necessary to minimize fire-related risks and improve community resilience. Existing literature highlights the importance of fire safety management, community involvement, leadership, emergency preparedness, and institutional collaboration in reducing fire incidents and enhancing public awareness (Nadzim & Taib, 2014) (Han, 2020) (Hidayati, 2022). This study examines the importance of fire prevention and fire safety education among barangay officials in Candaba, Pampanga, and explores its implications for community safety, governance, and sustainable development.

1.1 Background of the Study on Fire Prevention and Fire Safety Education among Barangay Officials of Candaba, Pampanga

Fire incidents continue to pose significant threats to human life, property, and community activities. Effective fire prevention measures and emergency response systems are therefore necessary to reduce the destructive effects of fire-related disasters. Local authorities, particularly barangay officials, are strategically positioned to spearhead fire safety initiatives because they serve as the closest representatives of government within communities. Their responsibilities

include maintaining peace and order, facilitating community development, and supporting emergency preparedness activities. Studies emphasize that effective fire safety management and emergency response protocols can significantly lessen the impact of fire incidents (Nadzim & Taib, 2014) (Han, 2020). Fire safety education equips barangay officials with knowledge regarding fire safety regulations, evacuation procedures, use of firefighting equipment, and community engagement strategies (Nadzim & Taib, 2014). Collaborative efforts involving barangay officials, local fire departments, and community organizations also contribute to improved fire prevention and emergency preparedness (Hidayati, 2022). The Local Government Code of 1991 (Republic Act 7160) defines the powers and functions of barangay officials in providing basic services and maintaining community welfare, while the Fire Code of the Philippines (PD 1185) outlines fire prevention and suppression measures. The Bureau of Fire Protection (BFP), under the Department of Interior and Local Government, is responsible for enforcing fire safety regulations, conducting fire prevention programs, and providing emergency services (Pandangan, 2019). Despite these initiatives, communities still encounter challenges such as inadequate fire safety systems, limited resources, poor maintenance of firefighting equipment, and insufficient public awareness. Due to inadequate fire precaution practices and limited fire safety knowledge, fires commonly occur in residential and commercial establishments. Consequently, the BFP conducts educational campaigns and seminars in barangays to strengthen awareness and preparedness regarding fire prevention and safety. This study focuses on determining the importance of fire prevention and fire safety education among barangay officials in the 33 barangays of Candaba, Pampanga.

1.2 Themes and Insights from Related Literature on Community Fire Safety and Barangay Preparedness

Related literature emphasizes the importance of fire safety education, community awareness, leadership, preparedness, and institutional collaboration in minimizing fire-related incidents. Studies indicate that schools and institutions often lack adequate fire protection systems, emergency preparedness programs, and regular maintenance of firefighting equipment (Nadzim & Taib, 2014). Research in South Korea similarly revealed that although public institution managers recognized the importance of fire safety management, improvements in emergency preparedness and response capabilities were still necessary. Authentic leadership and community involvement were identified as important factors in successful fire disaster management programs (Hidayati, 2022). Leaders who demonstrate persistence, risk-taking, and knowledge of fire management regulations can encourage volunteerism and strengthen coordination among government agencies and community sectors. Several theories support fire safety education. The Knowledge, Attitude, and Practice (KAP) Theory explains that knowledge and awareness influence attitudes and behaviors toward fire safety (Cristobal, et. al, 2016). Cause and Effect Theory demonstrates the consequences of unsafe practices, while Cognitive Flexibility Theory highlights the importance of presenting fire safety information from multiple perspectives. Social Learning Theory emphasizes observational learning and modeling in shaping safety behaviors, and Protection Motivation Theory (PMT) explains how perceived risks influence preparedness and evacuation intentions. Foreign literature further stresses the importance of fire prevention education programs. Fire departments have continued adapting educational initiatives despite challenges brought by the global pandemic (Eller, 2023). Older adults remain highly vulnerable to fire-related injuries and deaths due to declining physical and mental capacities (Karemaker, et. al, 2021). Fire awareness campaigns in the United States promote smoke alarm installation, emergency escape planning, and safe household practices (University of Texas, Austin, 2018) (United Ways of New Jersey, 2018) (The American National Red Cross, 2018). Studies also identify electrical faults, faulty wiring, misuse of electrical appliances, naked flames, and improper installation of electrical systems as common causes of fire incidents (Shittu, A. A. 2022) (Addai et al, 2019). Proper waste management practices, regular inspections, and sustainable waste reduction measures are likewise necessary to reduce fire hazards (Chippy Mohan & Gireesh Kumar). Local literature highlights the BFP's initiatives such as the Barangay Fire Olympics and Barangay Ugnayan Program, which provide fire safety education, drills, seminars, and community-based awareness campaigns. These programs aim to improve barangay officials' capabilities in fire hazard assessment, emergency response planning, and community engagement.

1.3 Local, National, and Global Context of Fire Prevention and Fire Safety Education

Globally, fire incidents continue to threaten communities due to inadequate preparedness, poor infrastructure, unsafe electrical systems, and insufficient fire prevention measures. Tragic fire events in residential and commercial establishments demonstrate the necessity of strengthening fire safety systems and public awareness programs. Fire prevention initiatives worldwide increasingly focus on reducing fire-related injuries, fatalities, and environmental damage through public education and preventive measures (Coulter, 2014). Nationally, the Philippines faces significant fire safety challenges because of aging infrastructure, poorly installed electrical systems, overcrowded communities, and limited public awareness regarding fire prevention. The BFP remains responsible for implementing fire prevention campaigns, enforcing fire regulations, and providing emergency rescue services. The Updated Philippine Fire Code strengthens government policies related to fire prevention, public safety, and enforcement of fire safety measures in both public and private establishments. Locally, Candaba, Pampanga experiences the same risks associated with fire hazards in residential and community settings. Barangay officials are expected to coordinate with the BFP in implementing fire safety initiatives, disseminating information, and organizing preparedness activities within their respective barangays. However, challenges

such as limited awareness, insufficient resources, and varying levels of community participation continue to affect fire prevention efforts.

1.4 Theoretical and Conceptual Basis of Fire Prevention and Fire Safety Education

This study is anchored on several theories related to fire safety education and behavioral preparedness. The Knowledge, Attitude, and Practice (KAP) Theory explains that increasing individuals' knowledge and awareness regarding fire hazards promotes positive attitudes and safer fire prevention practices (Cristobal, et. al, 2016). Cause and Effect Theory supports the understanding of consequences resulting from unsafe behaviors, while Cognitive Flexibility Theory encourages critical thinking and adaptability through diverse learning perspectives. Social Learning Theory highlights the influence of observation, imitation, and modeling on fire safety behavior. Protection Motivation Theory (PMT) further explains that perceived vulnerability and severity of fire incidents can increase preparedness and evacuation intentions. The conceptual framework of the study identifies fire prevention and fire safety education as the independent variables, while the perceived importance of these activities among barangay officials of Candaba, Pampanga serves as the dependent variable. The framework assumes that increased exposure to fire prevention and safety education strengthens awareness, preparedness, and appreciation of fire safety practices among barangay officials.

1.5 Research Gaps and Rationale on Fire Safety Preparedness among Barangay Officials

Existing studies primarily focus on fire safety compliance in schools, commercial establishments, residential buildings, and institutional settings. Research also discusses fire prevention systems, firefighting facilities, emergency preparedness, and public awareness campaigns. However, limited studies specifically examine the importance of fire prevention and fire safety education among barangay officials, particularly in local communities such as Candaba, Pampanga. Previous literature emphasizes the need for strengthened community engagement, improved emergency preparedness, and continuous training programs for local leaders. Nonetheless, insufficient attention has been given to understanding how barangay officials perceive the importance of fire prevention and fire safety education activities conducted by the Bureau of Fire Protection. This study addresses this gap by examining the importance of fire prevention and fire safety education among barangay officials in Candaba, Pampanga. The findings may contribute to the enhancement of community-based fire prevention programs, institutional collaboration, and local disaster preparedness initiatives.

1.6 Alignment with Relevant Sustainable Development Goals (SDGs)

This study aligns with several Sustainable Development Goals (SDGs). It supports SDG 3 – Good Health and Well-Being by promoting fire safety awareness and reducing risks associated with fire-related injuries and fatalities. The study also aligns with SDG 11 – Sustainable Cities and Communities because strengthening fire prevention and disaster preparedness contributes to safer, more resilient, and disaster-ready communities. The research likewise supports SDG 16 – Peace, Justice, and Strong Institutions through the enhancement of local governance, community coordination, and institutional preparedness involving barangay officials and the Bureau of Fire Protection. Furthermore, the study contributes to SDG 17 – Partnerships for the Goals by encouraging collaboration among local government units, community organizations, and emergency response agencies in promoting fire safety education and prevention programs.

1.7 Importance of the Study to Multidisciplinary Sustainability

The study contributes to socio-economic sustainability by promoting safer communities and reducing property losses caused by fire incidents. Strengthened fire prevention and preparedness initiatives can help protect livelihoods, community resources, and public infrastructure. The research also contributes to community and institutional sustainability by enhancing the knowledge and preparedness of barangay officials responsible for local governance and emergency response. Through improved fire safety education and collaboration with the Bureau of Fire Protection, communities may develop stronger disaster resilience and emergency preparedness systems. Additionally, the study contributes to policy and governance sustainability by supporting evidence-based improvements in local fire prevention programs, awareness campaigns, and safety education initiatives. These efforts can strengthen institutional capacity, public safety management, and long-term community resilience against fire-related disasters.

2. Material and methods

2.1 Research Design

The study utilized a descriptive research design to objectively and systematically describe the importance of fire prevention and fire safety education activities among barangay officials in Candaba, Pampanga. Descriptive research aims to characterize a situation, issue, or phenomenon by presenting detailed information that supports understanding, classification, and interpretation. According to Sunaina Singh (November 24, 2023), descriptive research illustrates the characteristics of a subject or phenomenon under investigation and serves as a fundamental tool in scientific inquiry through observation, documentation, and analysis.

2.2 Locale of the Study

The study was conducted in the municipality of Candaba, Pampanga. Coordination was made with barangay officials from the municipality to facilitate the conduct of the research and ensure proper administration of the survey questionnaires during scheduled barangay meetings and gatherings.

2.3 Respondents of the Study

The respondents of the study consisted of 264 barangay officials from the 33 barangays of Candaba, Pampanga. Eight barangay officials from each barangay participated in the study. The total population was included as respondents because the number was considered manageable for the researcher.

2.4 Sample and Sampling Procedure

The study employed total population sampling in selecting the respondents. All identified barangay officials from the 33 barangays of Candaba, Pampanga were included to ensure complete representation of the target population.

2.5 Research Instrument

The primary source of data was a survey questionnaire administered to the respondents, while secondary sources included books, journal articles, theses, dissertations, memoranda, and online references. The research instrument consisted of two parts. Part I measured the level of importance of fire prevention activities as perceived by barangay officials, while Part II focused on the level of importance of fire safety education activities. The questionnaire used a four-point Likert scale, where 4 represented "Very Important," 3 represented "Somewhat Important," 2 represented "Barely Important," and 1 represented "Not Important." Responses with scores ranging from 3.25 to 4.00 were interpreted as "Very Important," 2.50 to 3.24 as "Somewhat Important," 1.75 to 2.49 as "Barely Important," and 1.00 to 1.74 as "Not Important." The instrument underwent validation by three experts. The first validator was the Provincial Fire Marshal of Pampanga, who evaluated the accuracy and alignment of the questionnaire items with the activities of the Bureau of Fire Protection. The second validator was a staff member from the Fire Safety Education Unit of the BFP Provincial Office of Pampanga, who reviewed the indicators related to fire safety activities. The third validator was the ABC President of Candaba, who assessed the instrument based on barangay engagement and relevance to local officials.

2.6 Data Gathering Procedure

Before conducting the study, the researcher prepared letters of request addressed to the Municipal Mayor, the President of the Liga ng mga Barangays, and the Barangay Captains to obtain permission for the conduct of the study. Authorization from the barangay officials ensured ethical compliance and confidentiality of the respondents' answers. The researcher personally administered the questionnaires through face-to-face interactions during barangay pulong-pulong meetings. Distribution of the questionnaires required coordination with the schedules of the barangays, and some difficulties were encountered due to the absence of certain participants during scheduled meetings. Data collection was completed within 60 days.

2.7 Data Analysis Techniques

The data gathered were organized, tabulated, and subjected to statistical treatment to answer the specific problems of the study. Frequency count and weighted mean were used to determine the average responses of the participants. The computation of the weighted mean was adapted from Downie and Heath (1984). The interpretation of responses was based on four categories, namely Very Important, Somewhat Important, Barely Important, and Not Important, according to the corresponding scoring intervals used in the study.

3. Results and Discussion

3.1 Level of Importance of Fire Prevention and Fire Safety Education

3.1.1 Fire Prevention Practices

The findings revealed that the respondents generally perceived fire prevention activities as Somewhat Important, with an overall average weighted mean of 3.17. The highest-rated indicators were consulting electrical safety experts, installing appropriate circuit breakers and fuses, maintaining electrical outlets and switches in good condition, and conducting regular inspections of electrical systems, all interpreted as Very Important. Meanwhile, practices such as avoiding overloaded outlets, regularly checking cords, adhering to electrical codes, and unplugging appliances when not in use were only considered Somewhat Important. The results indicate that barangay officials recognize the technical and structural aspects of fire prevention but may not fully prioritize consistent safety practices within the community. This suggests a gap between awareness and the actual implementation of preventive behaviors. The findings support Zhang (2023), who identified damaged wiring, poor electrical installations, and misuse of appliances as major causes of residential fires. Floyd (2025) also emphasized that safety devices, regular inspections, and compliance with electrical standards significantly reduce fire risks. Lee et al. (2018) explained that the effectiveness of fire prevention should be measured not only through awareness but also through sustained implementation that reduces fire incidents. Similarly, Shittu et al., (2022) highlighted that unsafe

household behaviors contribute greatly to recurring fire outbreaks, while Rahman (2024) stressed that weak compliance with fire safety regulations increases the spread of fire in densely populated areas. These findings emphasize the need for stricter enforcement, continuous education, and stronger collaboration with the Bureau of Fire Protection.

3.1.2 House-to-House Fire Safety Engagement

The respondents assessed house-to-house fire safety engagement as Somewhat Important, with an overall weighted mean of 3.16. The highest-rated indicators included personnel wearing proper uniforms and identification, designation of personnel as Bumbero sa Pamayanan, proper accomplishment of inspection forms, and systematic documentation of survey findings, all interpreted as Very Important. Indicators related to follow-up actions, coordination with barangay officials, accompaniment by barangay representatives, and the use of reports for further interventions were rated only as Somewhat Important. The findings suggest that barangay officials value professionalism, legitimacy, and accountability during fire safety activities, but systematic monitoring and sustained collaboration remain insufficiently emphasized. This implies that while initial engagement is appreciated, long-term implementation and follow-up mechanisms still require improvement. Ruslanjari et al. (2024) emphasized that effective local disaster risk reduction depends on strong leadership, regular coordination, and stakeholder participation. Hastie (2017) noted that prevention programs become more effective when supported by documentation, monitoring, and evaluation. Ryan et al., (2020) further explained that accountability and follow-up mechanisms strengthen local emergency preparedness. Lehna et al., (2017) also highlighted that routine inspections and compliance monitoring improve the effectiveness of safety programs, while Ager et al., (2021) stressed that assessment tools and data analysis enhance response efficiency and strategic planning. These findings underline the importance of institutionalizing monitoring systems and strengthening barangay-BFP partnerships.

3.1.3 Fire Safety Lectures and Seminars

The findings showed that fire safety lectures and seminars were generally perceived as Somewhat Important, with an overall weighted mean of 3.14. The highest-rated indicators included lecture topics related to home and workplace fire safety, common household hazards, exit drills, electrical appliance safety, and customized lectures based on community needs, all interpreted as Very Important. However, scheduling, venue arrangements, seminar duration, and the use of multimedia equipment were rated only as Somewhat Important. The results indicate that barangay officials value practical and community-based educational content more than logistical considerations. Respondents appeared to recognize that lectures become more effective when they directly address visible risks and local concerns. Johnston & Tyler (2022) emphasized that fire safety programs become more effective when the content is tailored to the audience and their specific risks. Garrels-Bates (2018) also identified community involvement and topic relevance as essential in promoting safe practices. Diekman et al. (2020) explained that educational effectiveness increases when materials are adapted to the vulnerabilities of participants, while Seyedin et al. (2020) stated that participatory methods such as demonstrations and drills strengthen long-term ownership of safety practices. These findings suggest that fire safety education should combine practical content, accessibility, and community-centered approaches to improve preparedness and resilience.

3.1.4 Drills and Simulations

The respondents perceived drills and simulations as Somewhat Important, with an average weighted mean of 3.08. Conducting drills in high-risk sitios or puroks received the highest rating and was interpreted as Very Important. Other indicators, including resident participation in mock drills, immediate suppression of dummy fires, use of evaluation forms, and annual implementation of drills, were rated as Somewhat Important. The findings indicate that barangay officials recognize the importance of preparedness activities in high-risk areas but may not fully prioritize continuous implementation, monitoring, and evaluation of drills. This reflects a gap between recognizing the value of drills and consistently practicing them at the community level. Taylor (2025) explained that simulated fires help improve decision-making during emergencies and strengthen compliance under stressful situations. Sim et al., (2019) further noted that scenario-based simulations improve situational awareness and community resilience. Makhanu (2024) emphasized that drills in high-risk areas help identify weaknesses in local emergency response systems, while Kamila (2023) highlighted that regular supervision, evaluation, and documentation promote accountability and institutional learning. These findings suggest that drills and simulations become more effective when conducted regularly with proper evaluation, feedback, and active collaboration between barangay officials and the Bureau of Fire Protection.

3.2 Proposed Action Plan for Fire Safety Enhancement

The study proposed an action plan aimed at strengthening fire prevention awareness, improving house-to-house fire safety engagement, enhancing lectures and seminars, institutionalizing drills and simulations, and reinforcing policy support and monitoring. The proposed interventions included electrical fire safety seminars, distribution of information materials, barangay-level inspections, customized lecture series, annual fire drills, simulation-based responses, and integration of fire safety measures into barangay development plans. The proposed action plan emphasizes both knowledge enhancement and behavioral change to institutionalize fire safety practices within the barangays. Hwang et al. (2016) explained that participatory and community-tailored fire safety approaches improve preparedness and compliance. Kodur et al. (2020) also stressed that localized risk mapping and customized educational interventions increase community engagement.

Pitcher (2016) noted that regular monitoring and feedback improve retention of safety knowledge and compliance with procedures. Wise (2022) highlighted the importance of leadership involvement and accountability in sustaining safety programs, while Purnomo et al. (2018) explained that combining education with policy enforcement strengthens long-term institutionalization of fire safety practices. Cumiskey et al. (2019) further stated that integrating risk reduction into community governance increases local ownership and participation. Cleveland & Palen (2016) also emphasized that experiential learning and formal planning enhance adaptive problem-solving during emergencies. These findings support the implementation of a context-sensitive and systematically monitored fire safety program to strengthen resilience and reduce fire-related incidents in the barangays.

4. Conclusion and Recommendations

The study concluded that barangay officials in Candaba, Pampanga recognize the importance of fire prevention and fire safety education, particularly in terms of technical and structured interventions. However, regular safety practices, follow-up actions, and consistent implementation were not fully prioritized, indicating a gap between awareness and actual application. House-to-house engagement was valued for professionalism and accountability, although stronger coordination and continuity are still necessary. Fire safety lectures and seminars were considered effective when tailored to the specific needs and risks of the community, while drills and simulations were viewed as important for preparedness in high-risk areas but require regular implementation, evaluation, and feedback. Overall, the study emphasized the need for a systematic and multi-level approach that integrates education, participation, drills, and policy support to institutionalize fire safety practices among barangay officials.

The study recommends strengthening fire prevention awareness through regular seminars, distribution of informational materials, and implementation of inspection checklists to improve compliance with safety measures. House-to-house engagement should be enhanced through stronger community participation, designation of Fire Safety Focal Persons, and regular feedback sessions. Fire safety lectures and seminars should focus on the specific risk profiles of barangays and be conducted in accessible venues to encourage participation. Drills and simulations should be institutionalized through annual implementation, scenario-based activities, and post-drill evaluations to improve emergency response skills. Policy support and monitoring should also be reinforced by integrating fire safety programs into barangay development plans and conducting regular monitoring and evaluation activities. Future studies may further explore digital fire safety education, mobile drills, and behavioral approaches related to fire safety compliance.

The study was limited to 264 barangay officials from the 33 barangays of Candaba, Pampanga and focused only on their perceptions regarding the importance of fire prevention and fire safety education. The data were gathered using survey questionnaires, which relied on the honesty and understanding of the respondents. The study also concentrated on selected areas of fire prevention, house-to-house engagement, lectures and seminars, and drills and simulations, which may not fully represent all aspects of fire safety practices and preparedness in other communities.

Compliance with ethical standards

The authors declare no conflict of interest, and this study received no external funding. The researchers acknowledge the participation and cooperation of the barangay officials of Candaba, Pampanga, as well as the support of the concerned local officials and the Bureau of Fire Protection during the conduct of the study. Participation in the study was voluntary, informed consent was obtained from all respondents, and data were gathered through non-invasive survey questionnaires. All information collected was treated with confidentiality, and no identifying personal information of the participants was disclosed.

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