Fire Risk Management in Libraries: A Literature Review

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Abstract

The purpose of this research is to describe the actions that can be taken by public libraries to prevent fires, as well as the factors that support and hinder these activities. This is a qualitative study using the literature review method, which involves collecting and analysing literature as the source of data. A total of 10 articles were analysed in this research. The fire prevention measures that can be taken by libraries are as follows: (1) regularly inspecting the building's condition, electrical systems, emergency exits, and the availability of fire extinguishing equipment; (2) storing flammable materials outside the main building; (3) implementing a no-smoking policy within the library premises; (4) turning off unnecessary electronic devices after closing hours; (5) establishing a fire disaster management committee; (6) creating a communication network and a list of contacts for fire disaster response services; (7) distributing firefighting equipment; (8) conducting training on fire disaster response procedures for all library staff. Factors that can support the preparedness of public libraries in dealing with fires are (1) an adequate number of fire-fighting equipment that is regularly inspected; (2) conducting training for staff on fire disaster response procedures by the local fire department; (3) the existence of fire response Standard Operating Procedures (SOP) that comply with safety standards and building conditions. On the other hand, factors hindering fire preparedness efforts in public libraries are (1) lack of knowledge about fires; (2) insufficient training to deal with fires; (3) staff indifference in taking preventive measures and preparations for fire disasters.

Keywords: library management; disaster management; fire risk

INTRODUCTION

A library is a place for collecting and providing various forms of information sources managed in specific ways to meet the information needs of library users (Anwar, 2019). The information sources served in libraries can be in printed or electronic form. There are several types of libraries, one of which is a public library. A public library provides various library materials that can be utilized by all segments of society.

Public libraries, like other organizations, are not entirely safe from various emergency threats or disasters caused by natural occurrences, accidents, or human negligence. Emergencies are unforeseen events that have the potential to become disasters with serious impacts if not promptly addressed (Pratiwi, 2021). One type of emergency that can escalate into a disaster if not properly handled is a fire. Fire is a hazard caused by nature, accidents, or human negligence and can pose a danger to buildings, collections, staff, and even library users.

Every library, including public libraries in Indonesia, should take past library fire cases as lessons to increase vigilance and optimize the preparedness of each library for fire incidents. Cuneo (2020) described one such case, the Linköping City Library fire in Sweden that occurred on September 20, 1996. The fire was caused by an intentional act of arson against the immigration information office located in the same building as the Linköping City Library. The fire spread rapidly because the library contained furniture and room decorations made of flammable materials. As a result, around 150,000 monographs, audio-visual collections, and catalogue cards containing descriptions of approximately 300,000-400,000 books in the library's collection were damaged. Although the Linköping City Library was insured, it did not have backup copies of the catalogue cards that were consumed by the fire. It took several years to reconstruct the catalogue, and it cost over three million euros to create an online catalogue.

The first lesson learned from the Linköping City Library fire case is that libraries should avoid using furniture or decorations made of flammable materials. Each piece of furniture or decoration used should be examined for its fire resistance. This suggestion is in line with Sungadi's (2020) opinion that libraries can reduce the risk of fires by designing library buildings with fire-resistant walls or installing fire alarms. Cuneo (2020) suggests using smoke-sensitive fire detectors in library buildings. Automatic sprinklers should also be installed as they can help extinguish fires when they are still small. Libraries should also provide training on fire disaster response

procedures to their staff, so they know what to do in the event of a fire and how to use the firefighting equipment provided by the library. The last lesson is that libraries should have backup copies of catalogues, whether in printed or electronic form, stored in an online database.

The occurrence of a fire is generally unpredictable and can cause significant damage in a short period if not promptly handled. Meanwhile, libraries have various types of collection materials, such as printed collections and ancient manuscripts, which would be destroyed if consumed by fire. If such an incident occurs, the library will require significant time, effort, and expenses to restore operations to normal, although some aspects, such as ancient collections, may not be recoverable (Fadhli, 2019). Therefore, libraries must take preventive measures as early as possible and thoroughly prepare themselves to face the possibility of fires and reduce the potential risks they may pose.

The aim of this research is to discuss the various efforts that libraries in Indonesia can undertake to prevent fires and the necessary preparations they should make to address fire incidents. This study also aims to identify factors that can support or hinder librarians' preparedness efforts in facing library fires.

METHOD

This study is qualitative research that utilizes a literature review method. The data was obtained from the Google Scholar database published between the years 2017 and 2021. The researchers used a combination of keywords with Boolean logic operators such as AND, OR, and NOT. Selected literature consists of studies that discuss fire prevention methods and various preparations that libraries can undertake to address fires. After a selection process based on the research objectives, a total of 10 sources were found and used as the analysis material for this study. These sources were analysed in accordance with the research objectives, and a mapping analysis was conducted to facilitate the researcher in understanding the content of each article. Additionally, the narrative from the analysis will be more easily understood by readers of this research.

RESULT AND DISCUSSION

Fire is one type of emergency that has the potential to become a disaster with fatal consequences for any organization, including public libraries in Indonesia. Fires can be caused by natural factors, human negligence, and accidents. Natural factors

that can cause fires in public libraries in Indonesia include lightning strikes and forest fires that affect the surrounding areas during the dry season and spread to the library. Abba et al (2021) identified several human negligence factors that can cause library fires, including:

(1) Carelessness of staff in implementing fire prevention tactics;

(2) Poor maintenance and upkeep of the library;

(3) Staff negligence in ensuring that all lights and electrical sockets are switched off after library closing time;

(4) Non-compliance of staff and patrons with smoking bans or improper disposal of cigarette butts in library areas;

(5) Lack of funds to procure an up-to-date fire protection system;

(6) Absence of a dedicated committee for handling fire disasters.

Additionally, there are accident factors that can cause library fires, such as electrical short circuits. Pitri (2019) revealed that the behaviour of library patrons, such as connecting. personal electronic devices like laptops to the library's electrical system, can increase the power consumption and the potential for electrical short circuits. Therefore, library patrons are advised to exercise caution when charging their personal electronic devices in public libraries. Fires pose a danger to public library buildings and their entire collections, as well as the staff and patrons inside them. Gupta (2018) states that fires result in losses from two perspectives for every library that experiences them: literature loss and cultural loss. From the perspective of literature, public libraries will lose their collection of library materials, which require significant costs and time to restore or replace. There are even types of collections that cannot be replaced if damaged, such as ancient manuscripts. Meanwhile, from a cultural perspective, public libraries will lose elements of culture and societal history contained in specific library materials they possess. These losses will undoubtedly disadvantage the community, which should learn from the culture and history contained in those library materials. Therefore, quick and appropriate actions are necessary to address fires in public libraries because mishandling will only worsen the damage or even endanger the people inside. To prevent this, each library needs a comprehensive disaster management plan to safeguard the safety of every collection and its employees (Perdana et al., 2020). However, it should be emphasized that disaster management plans should focus specifically on the organization, and caution must be exercised when using general examples from other organizations (Feather, 2017). Therefore, staff members of public libraries must familiarize themselves with

the characteristics of their buildings and assets to develop effective fire disaster management plans for their libraries.

Recognizing the characteristics of buildings and potential disasters that public libraries may face can begin with conducting risk assessments. In the book "Manajemen Rekod Aktif" by Pratiwi (2021), it is explained that every library should conduct risk assessments before determining appropriate actions to address a disaster. Risk assessment involves identifying potential disasters that may occur in the region or within the organization itself, as well as considering how these disasters can damage the organization (Pratiwi, 2021). Risk assessment for fires in libraries can be conducted by examining various factors that may cause fires in the area where the public library is located. For example, if a public library is situated in an area prone to forest fires during the dry season, the library should be more vigilant during that time.

Public libraries should also perform regular inspections of the library building itself. Routine inspections should be conducted to assess the condition of the building, electrical systems, and emergency exits. The inspection of electrical systems is particularly important as many fire incidents are caused by accidents related to electricity, such as electrical short circuits. Therefore, the electrical system of the public library should be periodically checked and promptly repaired if any damages are found. The design of the library space and the arrangement of furniture inside the public library should also be considered (Fadhli, 2019), as inappropriate spatial design can hinder the evacuation process or firefighting efforts during a fire.

Risk assessment and regular inspections of public library buildings will maximize staff efforts in developing fire disaster management plans that include actions to prevent fires. Public libraries should also maintain a record of past disasters that have occurred in the library building to track vulnerable locations and maximize fire prevention efforts, as stated by Feather (2017), "Maintaining an 'incident log' of disaster events is a practical way of keeping track of vulnerable sites in the building" (p.40). In addition to conducting routine inspections of the building and its electrical systems, there are several other preventive measures that should be included in the fire disaster management plan for public libraries. In the course material book on Information Media Preservation and Conservation by Sudarsana (2019), the following fire prevention measures that can be taken by libraries are mentioned:

(1) Placing flammable library materials or equipment outside the main building;

(2) Enforcing a no-smoking policy indoors for all staff and library users;

(3) Installing alarms such as smoke detectors in strategic locations and regularly checking their functionality;

(4) Selecting fire extinguishing equipment appropriate for library materials and placing them in easily accessible locations, and regularly inspecting them

Musrifah et al. (2019), propose several additional actions that can be taken by public libraries to reduce the risk of fire, as follows:

(1) Avoid using machinery-operated tools and preferably use manually operated tools;

(2) Use gas-powered forklifts instead of electric ones;

(3) Avoid using fire sources such as heating devices inside the library;

(4) Do not store flammable materials such as chemicals, oil, paint, or other combustible substances indoors.

(5) Keep storage spaces at least 30 cm away from the nearest light source.

Continuity from prevention is preparation. These two actions are interconnected because well-executed prevention and preparation for disasters can help reduce the risk of loss and damage caused by disasters, including fire disasters.

As a comparison and complement to the fire prevention actions mentioned by Sudarsana (2019), Feather (2017) in his book "Disaster Management for Libraries and Archives" states that there are several fundamental elements of preparation that can be undertaken to face disasters in libraries, as follows:

(1) Establishing a disaster management committee;

(2) Establishing communication networks through telephones;

(3) Compiling a list of service provider contacts;

(4) Assembling and distributing disaster equipment;

(5) Training library staff in implementing disaster response procedures;

The disaster management committee in the library is formed to clarify the division of responsibilities, and all staff involved in the disaster management planning program should be aware of their respective roles (Feather, 2017). With the establishment of a fire disaster management committee, its members will understand the authority and roles they need to fulfil when facing a fire disaster, starting from prevention to recovery phases.

As mentioned by Feather (2017), public libraries also need to establish telephone communication networks (telephone trees) so that all staff members are aware of who to contact in emergency situations. The communication network in fire disaster

management includes the library head, managers and supervisors, all staff members, emergency coordinators, library responsible body, and the fire department.

Furthermore, in line with Feather's opinion (2017), libraries need to compile a list of contacts and service providers capable of dealing with fire disasters in public libraries and have a comprehensive understanding of the library and its collections to avoid mishandling collections threatened by fire hazards.

An important factor that can support the preparedness efforts of public libraries in facing fires is an adequate number of firefighting equipment. Firefighting equipment should be evenly distributed and placed in easily accessible locations. The selection of firefighting equipment should be appropriate for the items stored in that location since fires have different classifications that require different handling methods for each classification. Specifically, the following are the fire classifications and their respective firefighting equipment as defined by the Banda Aceh Fire Department based on NFPA (National Fire Protection Association) classifications:

Kelas	Kebakaran	Pemadam
A Padat Non Logam	Kertas, Kain, Plastik, Kayu	Air, Uap Air, Pasir, Busa, CO_2, Serbuk Kimia Kering, Cairan Kimia
B Gas/Uap/Cairan	Metana, Amoniak, Solar	CO_2, Serbuk Kimia Kering, Busa
C Listrik	Arus Pendek	CO_2, Serbuk Kimia Kering, Uap Air
D Logam	Aluminium, Tembaga, Besi, Baja	Serbuk Kimia Sodium Klorida, Grafit
E Radioaktif	Bahan-bahan Radioaktif	<Belum diketahui secara spesifik>
K Bahan Masakan	Lemak dan Minyak Masakan	Cairan Kimia, CO_2

Source: Banda Aceh Fire Department, 2020

Figure 1. Fire Classification and Firefighting Equipment

As a comparison to the previously mentioned firefighting equipment, a study by Abba (2021) at Federal University Dustinma, Nigeria, mentioned several firefighting equipment recommended by Jim's Fire Safety (2017) to protect the safety of homes and workplaces from fire, which are also relevant for safeguarding public libraries in Indonesia. The recommended firefighting equipment are as follows:

(1) Portable Fire Extinguisher (APAR - Alat Pemadam Api Ringan);

(2) Fire alarm;

(3) Fire hose reel;

(4) Fire equipment signage placed near each firefighting equipment;

(5) Sprinkler system;

(6) Fire hydrant;

(7) First aid equipment

Each firefighting equipment should be regularly inspected to ensure its operability. If deemed expired or damaged, the equipment should be promptly replaced.

Another supportive factor in enhancing the readiness of public libraries against fire is providing training for the staff in implementing fire disaster response procedures. The fire disaster response procedure training should ideally be conducted in collaboration with the local fire department. In this training, all library staff should be equipped with knowledge about fire, its causes, and the potential negative impacts that libraries may face in the event of a fire. Furthermore, the staff should be taught fire prevention measures, how to operate firefighting equipment, whom to contact immediately when a fire occurs, and the evacuation procedures for staff, visitors, and priority collections.

The existence of evacuation procedures for staff, visitors, and collections is also a supportive factor in improving the readiness of public libraries against fire. These procedures should be developed following applicable safety standards and tailored to the building and regional conditions, based on the results of previous risk assessments, while considering the preservation of all library collections and electronic equipment. It would be beneficial if these procedures receive certification from the fire department (Fadhli, 2019). To facilitate the evacuation process for staff and visitors, the evacuation procedures should be documented and prominently displayed in various strategic locations within the public library, accessible to everyone. These procedures should be regularly reviewed and evaluated in case of any changes in the situation, such as building renovations that alter evacuation routes, requiring the disaster management committee to revise the previously established evacuation procedures for staff.

The elements of disaster preparedness are factors that support the formation of readiness in public libraries in dealing with fires. Public library staff are expected to be more prepared for fires after establishing a fire disaster management committee, having a special communication network, compiling a list of contacts and service providers to be contacted in case of a fire, obtaining an adequate supply of firefighting equipment, and receiving training on fire disaster response procedures. It would be better if the local fire department participates in supporting and accompanying the training on disaster response procedures, ensuring that the material conveyed is relevant and in accordance with applicable standards.

Meanwhile, factors that can hinder the preparedness of public libraries include a lack of knowledge about fires and a lack of training to deal with them. Sudjana et al. (2021) conducted research on the relationship between knowledge and disaster preparedness at the Library of Universitas Negeri Malang and found a correlation coefficient of 0.733, indicating a positive relationship between the two variables. Based on the research findings, it can be concluded that the level of fire preparedness among library staff will be higher if they have a high level of fire knowledge. Therefore, training on fire disaster response procedures is necessary as preparedness is influenced by the basic fire knowledge possessed by the staff and the specialized training they have received.

Another inhibiting factor is staff indifference. All forms of prevention and preparedness efforts for any disaster will not be maximized if all parties involved lack awareness and concern to cooperate. Robertson (2020) states that "Apathy thwarts many disaster-planning projects" (p. 14). This means that indifference can hinder many disaster management programs. Indifference can slow down activities and impede the performance of all parties involved, leading to a continuous and less meaningful process. In other words, all preventive actions and preparedness efforts will not proceed smoothly if the majority of library staff are not concerned about disaster management programs. Therefore, all public library staff should have awareness and concern to cooperate in taking preventive actions and preparing for fire disasters.

Public libraries in Indonesia can take the National Library of the Republic of Indonesia as a role model in preventing and preparing for fires in libraries. Research conducted by Perdana et al. (2020) at the National Library of the Republic of Indonesia showed that the library has facilities and infrastructure that meet the requirements for fire prevention, including fire hydrants and Portable Fire Extinguishers (APAR). The

National Library of the Republic of Indonesia has also formed a special team responsible for firefighting to protect the collections and library staff. The team has received training and collaborated with the National Disaster Management Agency (BNPB) and the fire department. The research also provided recommendations for the National Library of the Republic of Indonesia that should also be considered by public libraries, such as implementing a smoking ban inside library premises and developing Standard Operating Procedures (SOPs) regarding disasters so that staff can quickly and correctly implement fire prevention procedures in accordance with established procedures and standards.

In addition to the National Library of the Republic of Indonesia, public libraries in Indonesia can also look to the Indonesian Institute of the Arts (ISI) Surakarta Library as a model for fire prevention and preparedness. Based on research conducted by Laksmiwati (2019), the ISI Library has implemented a smoking ban inside the library, uses electrical installations in accordance with applicable standards, provides regularly maintained fire extinguishers, and has internal and external communication facilities that can be contacted in case of a disaster. These communication facilities include earphones, telephones, and loudspeakers installed in the library to announce in case of a fire. The ISI Library has also created backups of its important assets, although not all important collections, such as reference collections, have been digitized.

Based on the research by Musrifah et al. (2019), the Faculty of Animal Sciences Library at Gadjah Mada University (UGM) in Yogyakarta can also serve as an example for public libraries in preventing and being prepared for fires. The faculty library conducts regular inspections of its rooms and equipment, provides disaster response tools, regularly checks and maintains the tools, provides disaster response training to staff, makes backups of important collections, and strives to develop written disaster management procedures.

CONCLUSION

Fires in public libraries can be caused by natural factors, human negligence, and accidents. Public libraries need to take preventive and well-prepared actions in dealing with fires to reduce the risk of losses and damages caused by the disaster. Ideally, public libraries in Indonesia can optimize fire prevention and preparedness efforts by distributing firefighting equipment evenly, developing fire response Standard Operating Procedures (SOPs), conducting fire disaster response training

accompanied by the local fire department, creating backups of catalogs, and digitizing important collections and storing them in an online database

DECLARATION OF CONFLICTING INTERESTS

The authors state that there is no conflict of interest in the publication of this article.

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