

The corridor to survival: Assessment of disaster management literacy in a developing country

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Abstract

Studies have stressed the importance of disaster literacy and suggested that such awareness is an effective disaster management strategy. The success of this recommendation is however scarcely assessed in literature. This study therefore assesses the application of available disaster-related information in the management of disasters. The study was carried out in Ibadan, Nigeria. Data were collected by administering a questionnaire to residents in the selected Local Government Area (LGA) in Ibadan. Using systematic sampling technique, household heads' opinions were sampled in 20% of the buildings. This effort culminated in the sampling of 102 household heads in the LGA. The questionnaire addressed issues on household socioeconomic characteristics; sources, types, and manners of utilization of disaster-related information available to the households as well as the effects of available disaster-related information on disaster management. Data were analyzed using descriptive statistics. Results showed that 47.9% of the respondents were aware of post-disaster information, with television or radio (38.5%) and government agencies (26.6%) being the major information sources. It is suggested that disaster management literacy can be properly enhanced if households are provided with practical knowledge of effective pre-disaster, during-disaster, and post-disaster information.

KEYWORDS

disaster literacy, disaster management, disaster-related information, household awareness

1 | INTRODUCTION

The centrality of disaster literacy in disaster management is well established (Sims & Bauman, 1983; Fien, 1993; Clover, 1996; United Nations International Strategy for Disaster Reduction [UNISDR], 2009; Gregario, 2010; Brown & Haun, 2014). Disaster literacy is an individual's ability to read, understand, and use disaster-related information to make informed decisions about how to mitigate, prepare for, respond to, and/or recover from disaster occurrences (Brown & Haun, 2014). It is the individual's and public's acquisition and comprehension of disaster-related information before disaster events occur that is capable of assisting them during and after disaster events. It involves building knowledge in individuals and the public about the nature of environmental hazards and risks, possible causes and consequences of disasters, and conditions that make people vulnerable to disasters, thus being one of the strategies leading residents to the corridor to survival of disaster occurrences.

Disaster literacy is obtained through public education focused on disaster-related issues. It is a continuous program/strategy aimed at informing the public of the consequences of disaster outcomes on unprotected or vulnerable communities (Lidstone & Nielsen, 1998). The program is broadened in scope to be Disaster Risk Reduction edu-

cation (DRR education), which comprises primary and secondary education, training courses, academic programs, and professional trades and skills training (UNISDR, 2004a). The primary objective of DRR education is to ensure that disaster literacy causes behavioral change in the public thereby prompting them to identify and reduce hazards and risks in their environments (Murray et al., 2012).

A good understanding of the phases of disaster management is also a part of disaster literacy acquired through DRR education. This involves having an understanding of disaster prevention, reduction, preparedness, responses, and recovery phases (McEntire, 2004, Mulugeta et al., 2007; Magunda, 2010; Federal Emergency Management Agency, 2011; Olowoporoku, 2017). These stages of disaster management require adequate transfer of knowledge to the public. This is because when the public, especially in disaster-prone regions or affected areas, is adequately equipped with accurate information and training, it will be better able to understand and manage disaster events, which may reduce the amount of efforts required of relief organizations (UNISDR, 2004b; Sutton & Tierney, 2006; Chowdhury, 2009).

In the developed world, public education on disaster management designed to prepare the population for disasters is provided by governmental and nongovernmental relief organizations (Brown, Haun, & Peterson, 2014). However, this is not the case in the developing

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world, as a low level of disaster education significantly contributes to the vulnerability of its populace when disasters occur (Cortis & Enarson, 2004; Msengana-Ndlela, 2008; Zuma, Luyt, Chirenda, & Tandlich, 2012; Okorodudu-Fubara, 2013; Olowoporoku, 2017). In Nigeria, there has been a significant increase in the number of disaster occurrences (Sidi, 2012; Joshua, Makama, Joshua, Audu, & Nmadu, 2014; Wand, Ayuba, & Asika, 2015). For example, in 2012, flooding displaced approximately 7.7 million people while windstorms and rainstorms led to the deaths of hundreds of persons and economic losses in the country. Along with the challenges of obtaining the basic necessities of life, including water, health services, and shelter, floods and insecurity now represent central concerns in Nigeria (Wand et al., 2015).

Residents of some Nigerian cities are vulnerable to disasters due to little or no awareness of the knowledge that disaster literacy involves (Joshua et al., 2014). This was also emphasized by Wand et al. (2015) and Olowoporoku (2017), who wrote that although there are agencies directly responsible for disaster risk management in the country, allied professionals and the public are handicapped as a result of limited knowledge of disaster risk management and risk reduction that can be undertaken by the people residing in the affected communities. Therefore, a household-based literacy approach is necessary to pass on adequate knowledge of disaster management to the public. As studies in this regard are expected to have a direct bearing on the public, they could be carried out as household-, business-, and/or community-based surveys (Sutton & Tierney, 2006; Chowdhury, 2009; Gregario, 2010). A household-based survey on disaster literacy was used in this study, and thus involved households as the study population. As defined in this study, a "household" is an individual or groups of individuals living in the same dwelling unit who make provisions for their own food and/or other essentials of living without combining resources with other individuals or groups residing outside the dwelling unit (Watson & Wooden, 2002; Daramola & Olowoporoku, 2016).

Diverse groups and scholars have provided a series of justifications for household-based surveys and the usefulness of the data obtained from them regarding the subjects of interest (United Nations, 1995; Muwonge, 2006; International Federation of Red Cross and Red Crescent Societies, 2011; Augustine & Krotki, 2014). A synopsis of these justifications relates that household-based data are socioeconomically inclined and are useful for policymakers in formulating policies that could help in minimizing social and economic vulnerabilities to disasters. Moreover, household-based data reflect respondents' perspectives of their situations, which is useful in informing a bottom-up approach to disaster management decision-making. The people who participate in such surveys are thereby privileged to be able to share information that can help identify hazards, assess and mitigate risks,

and to take action to build safety and resilience into their communities, thus setting them on the corridors to survival.

Issues pertaining to various approaches to and practices regarding disaster management have captured the interest of scholars in different climes. Studies such as Waugh (2000), Hunter (2005), El-Zein, Nasrallah, Nuwayhid, Kai, and Makhoul (2006), Mulugeta et al. (2007), Chowdhury (2009), Cavallo and Noy (2009), Gregario (2010), Li and Goodchild (2010), Ojigi, Abdulkadir, and Aderoju (2013), Baldini, Karanasios, Allen, and Vergari (2014); Brown and Haun (2014), Brown et al. (2014), Novikova (2014), Owolabi and Ekechi (2014), Tad and Janardhanan (2014), Garba and Ahmadu (2015), Weichselgartner and Pigeon (2015), and Olowoporoku (2017) have looked at these issues.

Baldini et al. (2014), Owolabi and Ekechi (2014), and Garba and Ahmadu (2015) examined the role of information transfer in the management of disasters. These authors established that adequate communication is a critical strategy toward the management of disasters. These studies evaluated the interplay of different communication channels with disaster management principles as an approach to mitigate disaster impacts on vulnerable populations. In furtherance of the roles of communication in the management of disasters, Li and Goodchild (2010) examined the role of social networks in the management of disasters. These authors established the roles that social networks can play in the crowdsourcing of geospatial information for emergency management, data generation, and dissemination of information. Tad and Janardhanan (2014) likewise stressed the need for active information database systems for effective disaster management. All of these studies approached disaster management from the reactive point of view. The present study will consider sources of information for awareness building from social media, televisions/radios, newspapers, and rallies,¹ among others, considered as proactive and reactive disaster management measures.

Studies by authors such as Mishra and Suar (2012) and Olowoporoku (2017) examined socioeconomic characteristics as a determinant for disaster management. These studies established socioeconomic attributes such as age, income level, and educational status of people as determinants of residents' levels of vulnerability to disasters in different climes. In Nigeria, Abin and Wahab (2013) and Olowoporoku (2017) identified disaster management stakeholders in Nigeria to include:

- Government parastatals,²
- Community Development Organizations (CBOs),
- Nongovernmental Organizations (NGOs),
- Community leaders, and
- Residents.

However, these studies did not take into consideration residents' levels of literacy and the roles that various stakeholders play in the management of disasters. Authors of other studies that have examined disaster management literacy include Gregario (2010), Yavar, Mirtaheri, Farajnezam, and Mirtaheri (2012), Brown et al. (2014), and Weichselgartner and Pigeon (2015). These authors' studies stressed the various ways through which disaster-oriented information can be systematically acquired and presented. The authors suggested

scientific and traditional methods and means for disseminating disaster-related information and data presentation. However, these studies did not specifically focus on householders' awareness of disaster-related information or their application of the information available to them in managing disasters.

Therefore, this study proposes that the knowledge acquired by individuals is not enough to ensure that they will not be susceptible to disasters if this knowledge is not applied. The thrust of this study is:

- The type and frequency of disaster occurrence;
- Sources of awareness and severity attached to disasters experienced; and
- The application of acquired knowledge of disaster occurrence;

among other issues related to disasters, as the very essence of disaster management literacy.

2 | MATERIALS AND METHODS

The study was conducted in the Oluyole Local Government Area (LGA) in Ibadan, Oyo State, Nigeria. Oluyole is one of the LGAs in the suburb of Ibadan. The LGA was created in 1976, and its headquarters are in Idi-Ayunre. Physical features of the LGA include undulating rivers, natural drainage, and water bodies. Prominent is River Ogbere, which cuts across the LGA. The LGA covers a land area of 629 square Kilometers, and according to the 2006 census, it had a population 202,725. The LGA is home to small-, medium-, and large-scale industries. Among these are the Cocoa Research Institute of Nigeria, Eagle Flour Mills, British American Tobacco, Rom Oil, Nampak Limited, and Lafarge Cement. The LGA also has the largest teak forest reserve in Oyo State. The majority of residents in this LGA are Yorubas, who are Christians, Muslims, and traditionalists, and they engage in a variety of economic activities.

Undertaking a study of this type is required in disaster-prone areas. In this LGA, the presence of River Ogbere represents a risk of flood disasters. In 2011 and 2012, the LGA experienced substantial flood disasters as the Ogbere River overflowed its banks after consistent heavy rainfall events (Onwuebele, 2012; James et al., 2013). Factors that contributed to the overflow of the river included:

- The river's basin limited size;
- The presence of solid waste dumps blocking the river's valleys;
- The presence of physical development in floodplain areas; and
- The blockage of the waterway along Mosfala-Idi Osan road.

The flooding experienced in the Oluyole LGA was but one such case across Nigeria. During the same time, flooding affected 95 LGAs and an estimated 15.8 million people with severe economic losses. Buildings, civil structures, and critical infrastructure was also damaged (Sidi, 2012).

Primary data were collected through administration of questionnaire to heads of sampled households in the LGA during observation and survey. The questionnaire addressed issues on household

EXHIBIT 1 Number of buildings sampled in Oluyole Local Government Area (LGA)

Residential areas	Streets	Selected streets	Houses	Selected houses
Egbeda-Atuba	4	2	156	31
Odoona-Kekere	4	2	181	36
Ayegun	3	2	173	35
Total	15	6	510	102

Source: Authors' field survey, 2017.

socioeconomic characteristics; types and frequency of occurrence of experienced disasters; sources, types, and manners of utilization of disaster-related information available to the households; and the effects of available disaster-related information on disaster management. Socioeconomic variables such as gender, occupation, and educational qualifications (levels of educational achievement) were used to collect categorical data³ while age and income were collected as quantitative data, which were categorized during data analysis for ease of presentation. Respondents were asked to express their opinions of the severity of disasters using a 5-point Likert scale rating disaster effects from Quite Severe (QS), Moderately Severe (MS), Severe (S), Not Severe (NS), and Minimal Effects (ME).

A systematic sampling method was used to select the households that were surveyed based on identifiable residential buildings in the residential areas within the LGA. The first building was selected using simple random sampling technique with subsequent units selected at every fifth building in the study area. The total number of buildings identified in the surveyed residential areas is shown in the table in **Exhibit 1**. Twenty percent of the identified buildings was sampled. The data were analyzed using descriptive statistics. Data on socioeconomic attributes as well as on the sources, types, and manners of utilization of disaster-related information available to the households and the perceived effects of available disaster-related information on disaster management were analyzed with the frequency and percentage distributions presented in tabular form (see the table in **Exhibit 2**).

The mean index was used to analyze the perceived levels of severity of disasters that householders had experienced; these results are also presented in table form (see the table in **Exhibit 3**). The analysis of the responses evolved "Disaster Severity Indexes" (DSIs) and "Mean Disaster Severity Indexes" (\overline{DSI}). To obtain a DSI, a weighted value of 5, 4, 3, 2, and 1 was, respectively, attached to rate each response (i.e., QS = 5, MS = 4, S = 3, NS = 2, and ME = 1). The summation of weighted value (SWV) for each item was obtained through the sum of the product of number of responses of each item and its respective weighted value attached to each rating. This is expressed mathematically as:

$$SWV = \sum_{i=1}^5 X_i Y_i$$

where SWV = summation of weight value, X_i = number of the respondents providing rating i , and Y_i = the weight assigned a value ($i = 1, 2, 3, 4, 5$).

EXHIBIT 2 Socioeconomic characteristic distribution of the respondents

Socioeconomic	Response	Frequency	Percentage (%)
Gender	Male	45	44.1
	Female	57	55.9
	Total	102	100.0
Age (in years)	<20	9	8.8
	20–39	60	58.8
	40–59	28	27.5
	60 and above	5	4.9
	Total	102	100.0
Marital status	Single	31	30.4
	Married	60	58.8
	Divorced/separated	5	4.9
	Widowed	6	5.9
	Total	102	100.0
Educational qualification	Primary education	25	24.5
	Secondary education	51	50.0
	Tertiary education	26	25.5
	Total	102	100.0
Religion	Christianity	47	46.1
	Islam	52	51.0
	Traditional	3	2.9
	Total	102	100.0
Monthly income (₦)	<20,000	54	52.9
	20,000–39,999	33	32.4
	40,000–59,999	13	12.7
	60,000 and above	2	2.0
	Total	102	100.0
Occupation	Self-employment	50	49.0
	Private employment	26	25.5
	Civil service	21	20.6
	Unemployed	2	2.0
	Retired	3	2.9
	Total	102	100.0
Household size	1–5	62	60.8
	6–10	34	33.3
	Above 10	6	5.9
	Total	102	100.0

Source: Authors' field survey, 2017.

The DSI for each item on the scale was arrived at by dividing the SWV by the total number of the respondents ($N = 102$), which is mathematically expressed as:

$$DSI = \frac{SWV = \sum_{i=1}^5 X_i Y_i}{N}$$

EXHIBIT 3 Types of disasters

Attributes	Response	Frequency	Percentage (%)
Types of disasters	Flood	95	66.0
	Earth tremor	–	–
	Windstorm	44	30.5
	Building collapse	4	2.8
	Inferno	1	0.7
	Total ^a	144	100
Frequency of occurrence	Rarely	4	3.9
	Occasionally	21	20.6
	Frequently	74	72.5
	No response	3	2.9
Total	102	100.0	
Number of times	1–2	34	33.3
	3–4	34	33.3
	5 and above	25	24.5
	No response	9	8.8
Total	102	100.0	

Source: Authors' field survey, 2017.

*Total exceeds 102 because of multiple responses.

EXHIBIT 4 Level of severity of the disasters experienced

Disasters type	QS	MS	S	NS	ME	SWV	DSI	DSI- \overline{DSI}	Rank
	(5)	(4)	(3)	(2)	(1)				
Flood	25	56	153	46	4	284	2.78	+1.80	First
Windstorm	–	16	39	46	1	102	1.00	+0.02	Second
Building collapse	–	–	3	8	–	11	0.11	–0.87	Third
Inferno	–	–	–	–	1	1	0.01	–0.97	Fourth

Source: Authors' field survey, 2017.

$\overline{DSI} = 0.98$; QS, Quite Severe; MS, Moderately Severe; S, Severe; NS, Not Severe; ME, Minimal Effects.

The \overline{DSI} later was computed by summing the disaster severity and dividing by the number of the identified disaster types ($n = 4$), which is mathematically expressed as:

$$\overline{DSI} = \frac{DSI}{n}$$

Disaster types with the actual value of the \overline{DSI} indicated a moderate level of severity of disaster experienced by households. Disaster values with positive deviations indicated a high level of severity experienced by households; those disasters displaying negative deviations indicated low levels of severity experienced by households. The rankings of the index values were provided in the table in **Exhibit 4**.

3 | DATA ANALYSIS AND DISCUSSION

3.1 | Socioeconomic attributes of the respondents

This section discusses the compilation of the socioeconomic characteristics of the survey's respondents as presented in Exhibit 1. Variables considered included:

- Age,
- Gender,
- Educational qualification,
- Marital status,
- Household size, and
- Average monthly income of the respondents.

The gender distribution of the respondents showed that females accounted for a higher proportion of the respondents (55.9%) than the proportion of male respondents (44.1%). This implies that among the heads of households surveyed, women were more available to respond to the survey than males. This might be influenced by the prevalence of women who establish their trades or businesses around or in their residences. However, in essence, having a slightly greater number of responses from women than from men could be helpful in assessing disaster management literacy, as women are more vulnerable than men to disaster losses (Dhungel & Ojha, 2012; Ginige, 2015). Moreover, women are more likely to possess information about their dependents (children and old adults) than may be the case of male householders.

As Mishra and Suar (2012) and Olowoporoku (2017) identified, age plays a significant role in assessing disaster occurrences, data were then collected on the age of survey respondents. Respondents were grouped or categorized into four age groups:

- Teenagers (those older than 18 years and younger than 20 years);
- Young adults (20 to 39 years old);
- Elderly adults (40 to 59 years old); and
- Old people (60 years and older).

The predominant age group that could be active in acquiring disaster education is the young adult age group (20–39 years old), which constituted the majority.

The largest proportion of the respondents fell within the 20 to 39 years old age group (58.8%), followed by those within the 40 to 59 year old segment, which accounted for 27.5% of the respondents. Heads of household who were teenagers (those younger than 20 years but older than 18 years, which is the transition age to adulthood as recognized by the Nigerian constitution) accounted for 8.8%, while those who were 60 years and older constituted the smallest proportion of the sample (4.9%). The predominant age group that could be active in acquiring disaster education is the young adult age group (20–39 years old), which constituted the majority.

Responses regarding the marital status of householders included in the survey indicated that the majority of the respondents (58.8%)

were married, 30.4% were single, 4.9% were divorced or separated, while 5.9% were widowed. The fact that the majority of the respondents were married is likely to influence the degree to which they would be eager to acquire disaster education, considering the probable loss they could suffer in regard to their family members if disasters strike. The contribution of the levels of educational achievement of the respondents to their willingness to acquire disaster education is also salient. Based on the survey data, 50.0% of the respondents had attained the level of secondary educational, 25.5% had attained tertiary educational level, and 24.5% had attained primary education, which means that all of the respondents possessed basic formal education, with over two-thirds of them qualifying as well-educated individuals. This educational exposure will likely aid in the achievement of high disaster management education within these households.

Religion has great influence on people in this part of the world (Greenbaum, 1995; McCright, 2010) and was therefore examined. Results indicated that 51.0% of the households practiced Islam, 46.1% practiced Christianity, while the remaining 2.9% practiced traditional religion. This implies that those who practiced Islam and Christianity were dominant among the respondents. This presents the possibility of engaging the services of Islamic and Christian religious institutions in disaster education.

The income distribution of the respondents showed that, on a monthly basis, 52.9% of the respondents earned less than 20,000 Naira (₦), 32.4% earned between ₦20,000 and ₦39,999, 12.7% earned between ₦40,000 and ₦59,999, and 2.0% of the respondents earned ₦60,000 or more. According to the results, most of the respondents earned less than ₦20,000 a month. The minimum and maximum incomes were ₦5,000 and ₦65,000, respectively, while the average income of the respondents was ₦30,000. The modal income group was earning less than the average income, showing a high level of low-income earners in the survey area. Therefore, access by householders to high-quality disaster management education could be limited by their finances, which could heighten the rate of vulnerability to disasters in the study area.

Data on the respondents' occupations indicated that 49.0% were self-employed, 25.5% were employed in private sectors, 20.6% were civil servants, 2.0% were unemployed, and 2.9% were retired. The majority of the respondents were self-employed, which involved traveling to various villages to engage in the buying and selling of goods. Persons thus employed may not have sufficient time to participate in disaster management education. With respect to information on household size, 60.8% of the respondents reported that their households comprised between 1 and 5 members, 33.3% of the respondents reported that their households contained between 6 and 10 members, and 5.9% of the respondents had more than 10 household members. The highest proportion of the respondents (60.8%) had household sizes between 1 and 5. This indicates that the study area is less densely populated as a result of its location, which is at the periphery of the metropolis. As a result, reaching out to such small population regarding disaster management education could be convenient, in terms of engaging the people and running a study on how best to promote disaster management education and literacy.

3.2 | Types and occurrences of disaster experience

This section examines the types of disasters already experienced by respondents, the frequency of their occurrences, and the level of severity of disasters as perceived by respondents in the study area. Information in the table in Exhibit 3 shows that 66.0% of the respondents acknowledged the occurrence of floods, while none of the respondents acknowledged the occurrence of Earth tremors. Moreover, 30.5% of the householders surveyed acknowledged the occurrence of windstorms and 2.8% acknowledged the incidence of building collapses, but only 0.7% of the respondents acknowledged the occurrence of infernos on both small and large scale. These responses indicate that flood disasters are perceived as the most prevalent type of disaster in the study area followed by windstorms, which were reported by 43.1% of the respondents as disasters that are perceived as affecting the area. There were indications in the responses that flood disasters were caused by both the acts of nature (e.g., torrential rainfall) and the acts of man (e.g., blockage of drainage with refuse, building on flood plains), and that the acts of man worsened the flood disasters and caused even greater havoc than natural forces alone.

In regard to the frequency of disasters in the area, 3.9% of the respondents reported experiencing disasters rarely; 20.6% of the respondents reported experiencing disasters occasionally; 72.5% of the respondents reported experiencing disasters frequently; and 2.9% of the respondents declined to provide an answer. Furthermore, 33.3% of the respondents revealed that the number (frequency) of disasters occurring during the last three years was between one and two, while another 33.3% reported the number of disasters over the past three years as between three and four. In addition, 24.5% of the respondents revealed that disasters had occurred more than five times over the past three years, while 8.8% declined to comment. These findings further corroborate the respondents' perceptions that the study area experiences disasters frequently. As the most prevalent disaster reported was flooding, it could be deduced that 66.6% of the respondents perceived that flood disasters occurred either one to two times or three to four times over the previous three years.

To determine the level of severity of the disaster experience, respondents were provided with the types of disasters they had experienced, which were floods, windstorms, infernos, and building collapse.

3.3 | Level of severity of the disaster experience

This section focuses on the perception of the level of severity of disasters experienced by householders in the study area. To determine this, respondents were provided with the types of disasters they had experienced, which were floods, windstorms, infernos, and building collapse. Earth tremor was excluded because there was no record of its occurrence in the area and the perceived severity of its risk could not be determined. The table in Exhibit 4 presents the results of the perceived level of severity of disaster types in the study area. The DSIs for flood, windstorm, building collapse, and inferno were 2.78, 1.00, 0.11, and 0.01, respectively. The \overline{DSI} was 0.98 showing the average index value.

From these computations, it is evident that floods ranked first, with an index of 2.78, and a deviation from the \overline{DSI} ($DSI - \overline{DSI}$) of +1.8. Windstorms ranked second with an index of 1.00 and a deviation from the \overline{DSI} ($DSI - \overline{DSI}$) of +0.02. These positive deviations indicate that householders perceived their experiences with flood and windstorm disasters as having high levels of severity. On the other hand, building collapse ranked third, with an index of 0.11 and a negative deviation from the \overline{DSI} of -0.87, and inferno ranked fourth, with an index of 0.01 and a deviation from the \overline{DSI} of -0.97. These negative deviations indicate that householders perceived their experiences with building collapse and inferno as low in severity.

3.4 | Awareness and application of disaster-related information

This section presents results of the analysis of household heads' awareness of disaster-related information as well as their reporting of the sources and types of information and the manner in which they used the information (see the table in Exhibit 5). Household heads' awareness of disaster-related information showed that a very high proportion of the respondents (95.1%) were aware of disaster-related information, while a small proportion (4.9%) were not aware of the existence of such information. Furthermore, respondents reported receiving disaster-related information from television/radio (38.5%) and government agencies (26.6%). In addition to these sources, respondents mentioned symposiums (17.4%), newspapers (8.7%), religious institutions (5.0%), and disaster campaigns and rallies (1.3%).

With respect to the types of disaster-related information available to the householders, 5.4% reported the availability of risk assessment literacy comprising information on how to identify risk conditions and severity; 15.9% of the respondents acknowledged the availability of prevention information; 12.6% acknowledged information on disaster mitigation; and 12.2% acknowledged preparedness information, all of which are forms of pre-disaster information. Furthermore, 6.0% of the respondents reported receiving "during-disaster" relevant information, meaning emergency response information. Finally, 25.8% and 22.1% of the respondents reported having access to rehabilitation and response and construction details, types of information used post-disaster. This indicates that the type of disaster-related information to which most respondents had access (47.9%) was post-disaster information. In addition, the respondents in this study appeared not

EXHIBIT 5 Disaster-related information

Attribute	Response	Frequency	Percentage (%)
Awareness	Yes	97	95.1
	No	5	4.9
	Total	102	100.0
Sources	Government agencies	58	26.6
	Religious institutions	11	5.0
	Television/radio	84	38.5
	Rally	3	1.3
	Internet/social media	38	17.4
	Symposium	5	2.5
	Newspaper	19	8.7
	Total ^a	218	100
Type	Risk assessment	16	5.4
	Prevention	48	15.9
	Mitigation	38	12.6
	Preparedness	37	12.2
	Emergency response activities	18	6.0
	Rehabilitation	78	25.8
	Response and reconstruction	67	22.1
	Total ^a	302	100
Method of utilization	Preparedness	55	19.9
	Prevention	64	23.1
	Mitigation	47	17.0
	Rehabilitation	63	22.7
	Response	48	17.3
	Total ^a	277	100
Impact	Avoid conditions that cause disasters	46	19.8
	Gathering disaster preparedness kits	8	3.5
	Getting knowledge on early warning signs	57	24.6
	Participating in disaster management activities	79	34.0
	Knowing location of agencies and help to be offered	16	6.9
	Creating awareness on types of disaster type prone to	26	11.2
	Total ^a	232	100

^aTotal exceeds 102 because of multiple responses.

to understand the significance of warning messages provided by government agencies, nor did they appear to internalize such messages in a way that would lead them to make appropriate decisions or to take appropriate actions to prepare for disasters.

The various ways that householders made use of the available disaster-related information were also examined. Results indicated that 19.9% of the respondents utilized the information for disaster preparedness, 23.1% utilized it in disaster prevention, 17.0% utilized it in mitigating disasters, 22.7% utilized it during post-disaster rehabilitation, and 17.3% utilized it in post-disaster response and reconstruction. The greatest percentage of the respondents (23.1%) made use of their knowledge of disasters to prevent subsequent occurrences, which is a form of disaster management strategy. Although the 23.1% response might have been the highest among the responses,

the percentage of householders claiming to have used information for pre-disaster purposes (prevention/mitigation) is practically equal to the percentage using information for post-disaster purposes (rehabilitation/reconstruction).

The effects of available disaster-related information on the actions of the householders revealed additional information about the disposition of householders to use the knowledge of disasters that they had already acquired. According to the data, 19.8% of the respondents indicated that they would avoid conditions that might lead to disasters, 3.5% reported that they had engaged in assembling disaster preparedness kits, 24.6% gathered knowledge on early warning signs of impending disasters, which is also a form of disaster preparedness. Moreover, 34.0% participated in various disaster management activities organized by landlord associations, which involved

construction and regular cleaning of drains, 6.9% recognized the location of disaster management agencies, while 11.2% created awareness of the types of disasters to which the area might be prone, that is, advised others on possible disaster situations and what they should do to prepare, mitigate, survive, or deal with damage afterward.

4 | CONCLUSION

Disaster management literacy was assessed in Oluyole LGA of Oyo state. Socioeconomic attributes of surveyed respondents revealed that the survey captured a greater number of opinions from women than from men; the majority of the respondents were young adults, and more than two-thirds of the respondents were well educated. Moreover, flood disasters were viewed as the most prevalent and severe type of disaster in the study area. The occurrences of flood were often and attributed to torrential rainfalls accompanied by windstorms. Post-disaster information emanating primarily from television/radio and government agencies was the predominant information type available to the respondent.

The study concludes that there is high probability that disaster management literacy could be advanced in the LGA, especially among women, who are known to be more susceptible to disaster losses than men, and among young adults who could be active in acquiring disaster education. In the process of implementing education programs in this regard, detailed information on pre-disaster, during-disaster, and post-disaster phases (early warning signs and systems, use of emergency management kits and apps, location of refugee camps, health facilities and relief materials, among others) should be made available to households to enhance their independence in mitigating disasters, adapting the information into how disasters could affect them personally, and empowering householders in providing assistance to others at all phases of disaster management. These processes if well laid out will lead the respondents to the corridor to survival. According to Villagran de León, Bogardi, Dannenmann, and Basher (2006), the information should comprise prior knowledge of the risks faced by communities, technical monitoring and warning service for these, and dissemination of understandable warnings to those at risk and who are knowledgeable and are prepared to act.

Involvement of both internal and external stakeholders (e.g., NGOs, national and international organizations, other stakeholders outside the LGA) is required to ensure the feasibility of organizing and implementing disaster management literacy in the LGA. It is therefore recommended that the Oluyole Local Government Council should establish local emergency management committee and information centers at both the council and ward levels. This will aid in building residents' awareness of disaster management. Additional efforts can involve the recruitment, training, and introduction of community emergency response squads to scout all communities in the LGA in order to disseminate easy-to-understand, quick disaster response information. Interested groups such as NGOs, Community Service Organizations, Faith-Based Organizations, and CBOs can be included in the process of recruitment and training.

DRR and post-disaster relief and recovery education should be introduced as a compulsory module in the primary education schemes

governed by the LGA, to enlighten the children. This is because children, like women, need to be educated due to their susceptibility during disasters. The disaster education in school coupled with the disaster information that would be passed across to them by their parents, would go a long way in helping to inform them about the dos and don'ts in disaster periods. Finally, the major sources of information dissemination—the media, through televisions or radios, and government agencies—should be highly utilized.

ENDNOTES

- ¹ Rallies are exercise encompassing—having convergent places, meeting, and sensitization of participants and movement to designated places to create awareness.
- ² Parastatals are organizations that possess political power and are separated from the government, but who engage in actions that either directly or indirectly assist the government.
- ³ Categorical data are numerical data collected when specific grouped values have been structured by the researchers for selection by respondents.

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