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Effect of Health Education on Knowledge, Attitude, and Safety Practices Toward Flood-Induced Health Hazards Among Morticians in Rivers State, Nigeria

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ABSTRACT

This study examined the effect of health education on knowledge, attitude, and safety practices toward flood-induced health hazards among morticians in Rivers State, Nigeria. A one-group pretest–posttest quasi-experimental design was adopted. A sample of 142 morticians was used for the study. Data were collected using a validated and reliable instrument (Cronbach's alpha = 0.97) measuring knowledge, attitude, and safety practices toward flood-induced health hazards. A structured health education intervention was administered, followed by post-intervention assessment. Findings showed a significant improvement in knowledge, with correct responses increasing from 84.8% at pretest to 93.0% at posttest (8.2% increase). Attitudes toward flood-induced health hazards improved, with the grand mean rising from 3.17 ± 0.652 to 3.41 ± 0.591 (mean difference = 0.24). Safety practices also improved markedly, with the grand mean increasing from 2.78 ± 0.59 to 3.53 ± 0.53 (mean difference = 0.75), exceeding the criterion mean of 2.50. The study revealed that health education was an effective strategy for enhancing morticians' knowledge, shaping positive attitudes, and promoting safer practices in managing flood-induced health hazards. It recommended the integration of structured occupational health education into disaster preparedness programs for mortuary workers, particularly in flood-prone regions.

Keywords: health hazards, morticians, health education, flood-prone regions

INTRODUCTION

Flooding is one of the most frequent and destructive natural disasters globally, particularly in low- and middle-income countries, where weak infrastructure and poor drainage systems increase vulnerability to flood-related health hazards (Adelekan et al., 2021). In Nigeria, flooding has become a recurrent public health challenge, with Rivers State being among the most severely affected due to its low-lying geography, extensive river networks, and prolonged rainy seasons. Flood events in this region are often accompanied by widespread displacement, contamination of water sources, environmental degradation, and increased morbidity and mortality, thereby posing serious threats to both community and occupational health (Nkwunonwo, et al., 2020).

One occupational group that is significantly exposed to flood-induced health hazards, yet frequently overlooked in disaster preparedness and response frameworks, is morticians. Morticians perform essential services related to the handling, preservation, and management of dead bodies, especially during and after disaster events when mortality rates tend to increase. During floods, morticians are at heightened risk of exposure to biological, chemical, and environmental hazards, including infectious pathogens, decomposing bodies, contaminated water, sharp instruments, and hazardous chemicals used in embalming

(World Health Organization [WHO], 2023). These risks are further amplified in flood-prone settings such as Rivers State, where mortuary facilities may themselves become inundated, thereby compromising hygiene standards, storage conditions, and occupational safety.

Despite the critical role morticians play in disaster response and public health protection, their occupational health needs remain under-prioritized in many developing contexts. Existing evidence suggests that many morticians lack adequate training in infection prevention, hazard control, use of personal protective equipment (PPE), and safe body handling procedures during emergency situations (Olawuni et al., 2024). In flood situations, this gap becomes more pronounced, as workers are forced to operate under unsafe conditions without sufficient knowledge, preparedness, or institutional support. This situation not only endangers morticians themselves but also increases the risk of disease transmission to co-workers, families, and the wider community.

Health education has been widely recognized as a fundamental strategy for improving knowledge, shaping positive attitudes, and promoting safe occupational practices among workers exposed to health hazards (Glanz et al., 2023). Through structured training programs, health education interventions can equip workers with essential information, skills, and motivation required to identify risks, adopt protective behaviours, and comply with safety standards. In disaster-prone environments, health education plays a critical role in enhancing preparedness, response capacity, and resilience among vulnerable occupational groups (Paton et al., 2020). However, the effectiveness of health education interventions among morticians, particularly in the context of flood-induced health hazards, remains underexplored, especially in Nigeria.

In Rivers State, where seasonal flooding has become an annual occurrence, morticians often operate in environments characterized by limited infrastructure, inadequate drainage, and insufficient occupational safety regulation enforcement. Many mortuary facilities lack standardized protocols for flood emergencies, and routine training on disaster-related occupational health risks is uncommon. This has resulted in persistent unsafe practices, including inconsistent use of PPE, improper handling and disposal of contaminated materials, and limited adherence to infection prevention and control measures during flood events. Consequently, morticians remain vulnerable to occupational injuries, infections, and long-term health complications.

The present study therefore seeks to examine the effect of health education on knowledge, attitude, and safety practices toward flood-induced health hazards among morticians in Rivers State. By implementing a structured health education intervention and assessing changes through a pretest–posttest design, the study aims to generate empirical evidence on the effectiveness of health education as a tool for improving occupational health outcomes among this critical yet underserved workforce. Specifically, the study focuses on three core domains: knowledge of flood-induced health hazards, attitudes toward occupational safety and disaster preparedness, and safety practices related to hazard control and personal protection. Understanding the effect of health education on these domains is essential for informing policy formulation, workplace safety guidelines, and disaster preparedness strategies within the mortuary sector and beyond. Findings from this study are expected to contribute to the existing body of literature on occupational health education, disaster risk reduction, and health behaviour change, while also providing practical insights for government agencies, health educators, and mortuary administrators in Rivers State and similar flood-prone settings.

Aim and objectives of the Study

The aim of this study is to investigate Effect of Health Education on Knowledge, Attitude, and Safety Practices Toward Flood-Induced Health Hazards Among Morticians in Rivers State, Nigeria. Specifically, the following objectives guided the study:

1. determine the effect of health education on the level of knowledge of morticians about flood-induced health hazards in Rivers State.
2. measure the effect of health education on the attitudes of morticians towards safety practices in managing flood-induced health hazards in Rivers State.
3. assess the effect of health education on the safety practices adopted by morticians in managing flood-induced health hazards in Rivers State.

METHODOLOGY

Study Design: This study adopted a one-group pretest–posttest quasi-experimental design. This design was considered appropriate for assessing the effect of a health education intervention on morticians' knowledge, attitude, and safety practices toward flood-induced health hazards. Baseline data (pretest) were collected prior to the intervention, followed by the administration of a structured health education program, and subsequently, post-intervention data (posttest) were collected using the same instrument.

Study Area: The study was conducted in Rivers State, located in the Niger Delta region of southern Nigeria. Rivers State is characterized by extensive river networks, low-lying coastal terrain, and high annual rainfall, making it highly susceptible to recurrent flooding. The state comprises both urban and rural communities and hosts numerous public and private mortuaries across its local government areas. Flooding in Rivers State often results in widespread environmental contamination, infrastructural damage, and increased occupational health risks for workers, including morticians.

Study Population: The study population consisted of all registered morticians working in public and private mortuaries across Rivers State. This included embalmers, mortuary attendants, and other personnel directly involved in the handling, preservation, and management of dead bodies.

Sample Size and Sampling Technique: A sample size sample size of one hundred and forty-two (142) was determined using Taro Yamen formula. Morticians were selected using a combination of sampling techniques, including proportionate and simple random sampling, to ensure adequate representation across different mortuaries and local government areas. Where the population size was manageable, total enumeration was employed.

Instrument for Data Collection: The instrument for data collection is a structured self-designed test instrument knowledge, attitude and safety practices towards flood-induced health hazards (KASPFHH). The test instrument will be designed to level of knowledge, attitude and safety practices towards flood induced health hazards.

Validity and Reliability of Instrument: The instrument was subjected to face and content validity by the Department of Health Promotion, Environmental, and Safety Education and one expert in Measurement and Evaluation. A pilot study was conducted among a small group of morticians outside the study area to assess reliability. The internal consistency of the instrument was determined using Cronbach's alpha coefficient, with overall index of 0.97 indicating that it is reliable.

RESULTS

Objective 1: *Effect of health education on the knowledge of flood-induced health hazards among the morticians*

Table 1: Frequency and percentage analysis on the effect of health education on the knowledge of flood-induced health hazards among morticians.

S/N	Items	Pretest				Posttest				% diff	Remark
		Correct		Incorrect		Correct		Incorrect			
		F	%	F	%	F	%	F	%		
1.	Flood-induced health hazards are various adverse health effects on individuals and communities resulting from flooding events	123	93.2	9	6.8	132	100.0	0.0	0.0	6.8%	Positive Effect
2.	Floodwater can contain harmful bacteria and viruses that cause waterborne diseases.	96	72.7	36	27.3	113	85.6	19	14.4	12.9%	
3.	Contaminated floodwater can lead to gastrointestinal infections like cholera and dysentery.	115	87.1	17	12.9	127	96.2	5	3.8	9.1%	
4.	Contact with floodwater can lead to skin-related health hazards, including infections and irritations.	91	68.9	41	31.1	110	83.3	22	16.7	14.4%	
5.	Drinking untreated floodwater can cause serious health issues.	101	76.5	31	23.5	118	89.4	14	10.6	12.9%	

6.	Flooding can increase the hazard of vector-borne diseases, such as malaria and dengue.	100	75.8	32	24.2	114	86.4	18	13.6	10.6%
7.	Flooded areas often have a higher presence of mosquitoes and other disease-carrying insects.	106	80.3	26	19.7	125	94.7	7	5.3	14.4%
8.	Floods can disrupt sanitation systems, increasing the spread of infectious diseases.	108	81.8	24	18.2	125	94.7	7	5.3	12.9%
9.	Inhaling mold and damp air in flood-affected buildings can lead to respiratory problems.	100	75.8	32	24.2	113	85.6	19	14.4	9.8%
10.	Flooding can contaminate food supplies, causing foodborne illnesses.	113	85.6	19	14.4	125	94.7	7	5.3	9.1%
11.	Wading through floodwaters can expose individuals to hazards from hidden debris or sharp objects.	118	89.4	14	10.6	132	100.0	0.0	0.0	10.6%
12.	Electrical hazards from submerged power lines or appliances can occur during floods.	108	81.8	24	18.2	120	90.9	12	9.1	9.1%
13.	Proper handwashing after contact with floodwater can reduce the chances of infections.	113	85.6	19	14.4	125	94.7	7	5.3	9.1%
14.	Personal protective equipment (e.g., gloves, boots) is necessary when cleaning up after floods.	132	100.0	0.0	0.0	132	100.0	0.0	0.0	100.0%
15.	Flood-induced hazards can affect mental health and lead to conditions like anxiety or depression.	108	81.8	24	18.2	108	81.8	24	18.2	81.8%
16.	Vaccinations, such as tetanus shots, are recommended after exposure to floodwaters.	132	100.0	0.0	0.0	132	100.0	0.0	0.0	100.0%
17.	Flooding can mix embalming fluids with floodwater, creating chemical hazards in mortuaries.	127	96.2	5	3.8	127	96.2	5	3.8	96.2%
18.	Damp conditions in flooded mortuaries can result in respiratory hazards due to mold exposure.	124	93.9	8	6.1	132	100.0	0.0	0.0	6.1%
	GRAND PERCENTAGE		**84.8**		**15.2**		**93.0**		**7.0**	**8.2**

**diff = difference between the % of pretest correct answers and % posttest correct answers

Table 1 shows the frequency and percentage distribution on effect of health education on the knowledge of flood-induced health hazards among the morticians. The pretest and posttest results indicated an overall improvement in knowledge after the intervention. Before the training, awareness of some flood-related hazards was relatively high, with items such as understanding flood-induced health hazards (93.2%), the risk of exposure to sharp objects in floodwaters (89.4%), and the necessity of personal protective equipment (100.0%) showing strong baseline knowledge. However, gaps were evident in areas such as the presence of harmful bacteria and viruses in floodwater (72.7%), the risk of skin-related infections from floodwater exposure (68.9%), and the relationship between flooding and vector-borne diseases (75.8%). After the intervention, there was a clear improvement across nearly all items. Notable gains were seen in knowledge of skin-related infections from floodwater exposure, which increased by 14.4% (from 68.9% to 83.3%), and awareness that floodwater contamination can cause gastrointestinal infections, which rose by 9.1% (from 87.1% to 96.2%). Overall, the pretest correct response rate was 84.8%, while the posttest correct response rate rose to 93.0%, reflecting an 8.2% overall improvement. This shows that the health education intervention effectively enhanced morticians' knowledge of flood-induced health hazards, providing them with critical information to reduce risks in their occupational environment.

Research Question 2: *What is the effect of health education on attitudes towards flood-induced health hazards among the morticians?*

Table 2: Mean and Standard Deviation on the effect of health education on attitudes towards flood-induced health hazards among the morticians

S/N	Items	Pretest Mean	S.D	Posttest Mean	S.D	Mean Diff	Decision
1.	Flood-induced health hazards are a serious concern in mortuary environments.	3.12	.865	3.64	.678		Positive Effect
2.	Taking preventive measures against flood-induced health hazards is important.	3.00	.856	3.66	.663		
3.	Adequate preparation for flood events can reduce health risks in mortuaries.	2.88	.856	3.52	.805		
4.	Floodwaters in mortuaries pose a significant threat to public health.	3.42	.782	3.74	.625		
5.	The risk of disease transmission increases in mortuaries during flooding events.	3.42	.606	3.78	.451		
6.	Strict adherence to safety guidelines can minimize the impact of flood-related health hazards in mortuaries.	3.17	.895	3.64	.669		
7.	Implementing flood prevention strategies should be prioritized in mortuaries.	2.97	1.041	3.52	.796		
8.	Regular training on managing flood-induced health hazards is essential for mortuary workers.	3.71	.517	3.73	.492		
9.	The use of personal protective equipment (PPE) during flood events in mortuaries is critical to preventing health risks.	3.70	.523	3.72	.499		
10.	Flood-induced mold growth is a significant concern for health and safety in mortuaries.	3.76	.496	3.78	.467		
11.	Mortuary workers should take flood-related risks seriously to protect their health and safety.	2.98	.370	3.06	.424		
12.	Responding promptly to flood events can prevent severe health hazards in mortuaries.	3.08	.439	3.22	.529		
13.	Ignoring flood-induced hazards in mortuaries may lead to severe consequences for health and safety.	2.85	.470	2.99	.612		
14.	Authorities should provide more support to mortuaries in managing flood-induced health hazards.	2.89	.528	3.04	.647	**0.24**	
15.	Investing in infrastructure improvements is necessary to reduce flood-related health risks in mortuaries.	2.85	.470	2.99	.612		
	Grand Mean	**3.17**	**0.652**	**3.41**	**0.591**		

**diff = difference between the total pretest mean and total posttest mean

Table 2 presents the mean and standard deviation analysis on the effect of health education on attitude towards flood-induced health hazards among morticians in Rivers State. The total pretest mean score was 3.17 ± 0.652, while the posttest mean score increased to 3.41 ± 0.591, resulting in a mean difference of 0.24. This shows that health education positively influenced attitudes, as there was an overall improvement following the intervention. Before the intervention, morticians' pretest results indicated a

moderate level of concern about flood-induced hazards, with mean scores ranging from 2.85 to 3.76. The highest pretest score (3.76 ± 0.496) was for "Flood-induced mold growth is a significant concern for health and safety in mortuaries," reflecting existing awareness of mold risks. Likewise, recognition of disease transmission during floods was relatively high (3.42 ± 0.606). However, items on proactive measures, such as flood prevention strategies (2.97 ± 1.041) and infrastructure investment (2.85 ± 0.470), scored lower, suggesting weaker emphasis on prevention. After the intervention, posttest results showed improvements across all items. The highest posttest score (3.78 ± 0.451) was for "The risk of disease transmission increases in mortuaries during flooding events," confirming that training reinforced understanding of disease risks. Attitudes towards preventive measures (3.66 ± 0.663), adherence to safety guidelines (3.64 ± 0.669), and investment in infrastructure (2.99 ± 0.612) also improved, alongside recognition of institutional support (3.04 ± 0.647). Overall, the findings suggest that health education enhanced morticians' attitudes toward flood-induced hazards by reinforcing awareness of risks and encouraging preventive and preparedness measures. Though the changes were modest, the intervention demonstrated the potential of structured education to gradually shape more proactive attitudes in managing flood-related health risks in mortuaries.

Research Question 3: *What is the effect of health education on the safety practices towards flood-induced health hazards among the morticians?*

Table 3: Mean and Standard Deviation analysis on the effect of health education on the safety practices towards flood-induced health hazards among the morticians

S/N	Items	Pretest Mean	S.D	Posttest Mean	S.D	Mean Diff	Decision
1.	Regularly inspecting drainage systems around the mortuary is a personal initiative to prevent flooding.	3.15	.360	4.00	.000		Positive Effect
2.	Use sandbags or barriers individually to prevent floodwater from entering work areas.	3.22	.416	3.02	.123		
3.	Follow personal emergency steps for responding to flooding events.	2.46	.823	4.00	.000		
4.	Wear personal protective equipment (PPE) during flood.	2.48	.851	3.02	.123		
5.	Personally disinfect work areas after exposure to floodwater.	3.16	.507	4.00	.000		
6.	Relocate electrical appliances and equipment to safe areas as part of individual flood preparedness.	3.14	.511	3.02	.123		
7.	Adhere to proper waste disposal methods personally to prevent contamination during floods.	2.51	.833	4.00	.000		
8.	Participate in training on managing flood-induced health hazards for personal improvement.	2.56	.893	3.02	.123		
9.	Store water-sensitive tools and materials personally in flood-resistant areas.	3.24	.480	4.00	.000		
10.	Familiarize yourself with emergency exits and evacuation plans.	3.26	.472	3.02	.123		
11.	Use emergency pumps or water removal equipment when necessary as part of your role.	2.43	.743	4.00	.000		
12.	Educate yourself about health hazards associated with floodwater contamination.	2.43	.743	3.02	.123		
13.	Stay informed through the communication plan for alerting staff about flooding hazards.	3.14	.373	4.00	.000		
14.	Engage personally in maintaining flood-resilient practices within your work scope.	3.14	.393	3.02	.123		
15.	Follow rigorous hand hygiene and sanitation practices during flood events.	2.45	.745	4.00	.000		
16.	Ensure first aid kits and personal medical supplies are accessible during floods.	2.45	.734	3.02	.123		
17.	Monitor yourself for symptoms of waterborne diseases after flood exposure.	3.12	.371	4.00	.000		
18.	Ensure proper ventilation in your work area to prevent mold and mildew growth.	2.99	.546	3.02	.123		
19.	Handle dead bodies exposed to floodwater with enhanced personal precautions.	2.30	.707	4.00	.000		
20.	Conduct personal risk assessments to evaluate vulnerability to floods in your workspace.	2.45	.734	3.02	.123		
21.	Ensure body bags are personally sealed with waterproof and airtight materials.	3.15	.360	4.00	.000		
22.	Store dead bodies on elevated platforms or higher areas during flooding as part of personal practice.	2.99	.546	3.02	.123		
23.	Operate backup power sources to maintain refrigeration of bodies if within your role.	2.28	.691	4.00	.000		
24.	Use portable refrigeration units when necessary for maintaining body preservation.	2.43	.723	3.02	.123		

25.	Implement temporary freezing methods for preserving bodies during prolonged flooding situations.	3.14	.366	4.00	.000	
26.	Assist in relocating bodies to higher ground or safer areas during severe flooding.	2.98	.545	3.02	.123	
27.	Use waterproof containers or coffins for storing dead bodies to prevent submersion.	2.27	.678	3.92	.266	
28.	Personally ensure coffins are tightly sealed to prevent water infiltration.	2.43	.723	3.26	.439	
29.	Apply antimicrobial chemicals to reduce decomposition of bodies exposed to floodwater.	3.13	.358	3.81	.393	
30.	Conduct personal inspections of submerged bodies to ensure proper containment.	2.97	.538	3.15	.360	
31.	Use temporary embalming measures when traditional methods are disrupted by floods.	2.29	.705	3.95	.225	
32.	Secure hazardous materials, such as embalming fluids, in waterproof containers as part of personal practice.	2.44	.723	3.36	.481	
33.	Regularly inspecting drainage systems around the mortuary is a personal initiative to prevent flooding.	3.14	.366	3.91	.289	
Total		**2.78**	**0.59**	**3.53**	**0.53**	**0.75**

**diff = difference between the total pretest mean and total posttest mean
Criterion mean: 2.50

Table 3 presents the mean and standard deviation analysis on the effect of health education on safety practices towards flood-induced health hazards among morticians in Rivers State. The pretest grand mean score was 2.78 ± 0.59, while the posttest grand mean score increased to 3.53 ± 0.53, resulting in a mean difference of 0.75. This increase suggested that morticians had a moderate level of safety practices before the intervention but showed significant improvement after receiving health education. The reduced standard deviation in the posttest indicated that responses became more consistent. Specific safety practices showed varying degrees of improvement. Practices such as inspecting drainage systems, disinfecting work areas, adhering to proper waste disposal, and hand hygiene improved to a posttest mean of 4.00, indicating complete adoption. The use of personal protective equipment, participation in training, and ensuring proper ventilation increased moderately. Handling dead bodies with enhanced precautions, sealing body bags with waterproof materials, and using temporary embalming methods also showed significant improvement.

Overall, the findings indicated a positive effect of health education on safety practices, as shown by the increase in mean scores across assessed practices. The posttest grand mean score of 3.53 surpassing the criterion mean of 2.50, confirmed that the intervention successfully enhanced morticians' ability to prevent, prepare for and mitigate flood-induced health hazards.

DISCUSSION OF FINDINGS

This study examined the effect of health education on knowledge, attitude, and safety practices toward flood-induced health hazards among morticians in Rivers State, Nigeria. The findings demonstrate that the health education intervention had a positive and statistically meaningful influence across all three domains, thereby confirming the effectiveness of structured occupational health education in disaster-prone work environments.

The Effect of Health Education on the Knowledge of Flood-induced Health Hazards among Morticians

Findings from Table 1 revealed that health education significantly improved morticians' knowledge of flood-induced health hazards. The overall correct response rate increased from 84.8% at pretest to 93.0% at posttest, reflecting an 8.2% improvement. This indicates that the intervention successfully strengthened morticians' understanding of flood-related occupational risks. Prior to the intervention, baseline knowledge was already high for some items, such as understanding flood-induced health hazards (93.2%), exposure to sharp objects (89.4%), and the necessity of personal protective equipment (100.0%). However, notable knowledge gaps existed in critical areas such as awareness of harmful bacteria and viruses in floodwater (72.7%), skin-related infections from floodwater exposure (68.9%), and the relationship between flooding and vector-borne diseases (75.8%). These gaps pose significant occupational risks, as insufficient knowledge in these areas may increase vulnerability to infections and injuries during flood events.

Following the health education intervention, there were substantial improvements across nearly all knowledge items. The largest gains were observed in awareness of skin-related infections (+14.4%), the presence of harmful microorganisms in floodwater (+12.9%), and the risk of vector-borne diseases (+10.6%). These improvements suggest that the intervention effectively addressed previously identified knowledge deficits.

These findings are consistent with earlier studies that reported significant improvements in occupational hazard knowledge following health education interventions among high-risk workers (Afolayan et al., 2018; Umeh et al., 2019). The results also align with the Health Belief Model, which posits that increased knowledge enhances perceived susceptibility and severity, thereby motivating protective behaviour. Overall, the findings confirm that health education is an effective strategy for enhancing morticians' knowledge of flood-induced health hazards and reducing occupational vulnerability.

The Effect of Health Education on Attitudes toward Flood-induced Health Hazards among Morticians

Table 2 showed that health education had a positive effect on morticians' attitudes toward flood-induced health hazards. The grand mean score increased from 3.17 ± 0.652 at pretest to 3.41 ± 0.591 at posttest, yielding a mean difference of 0.24. Although the magnitude of change was moderate, it reflects a meaningful improvement in attitudes following the intervention. Before the intervention, morticians demonstrated moderate concern about flood-induced hazards, with relatively high scores for mold-related risks (3.76 ± 0.496) and disease transmission during flooding (3.42 ± 0.606). However, lower scores were observed for preventive and institutional factors, such as prioritizing flood prevention strategies (2.97 ± 1.041) and investing in infrastructure improvements (2.85 ± 0.470). This suggests that while morticians recognized flood risks, they placed less emphasis on proactive and preventive measures.

After the intervention, posttest scores increased across all attitude items. Notably, attitudes toward preventive measures (3.66 ± 0.663), adherence to safety guidelines (3.64 ± 0.669), and institutional support (3.04 ± 0.647) improved. This indicates that the health education program not only reinforced awareness of hazards but also strengthened positive attitudes toward prevention, preparedness, and institutional responsibility.

These findings support previous research showing that health education interventions positively influence workers' attitudes toward occupational safety and disaster preparedness (Paton et al., 2020; Shimi et al., 2010). According to the Health Belief Model, attitude change is facilitated when individuals perceive both the severity of risks and the benefits of preventive action. The modest but consistent improvement observed in this study suggests that structured health education can gradually reshape morticians' attitudes toward flood-related occupational risks and safety responsibilities.

The Effect of Health Education on Safety Practices toward Flood-induced Health Hazards among Morticians

Findings from Table 3 indicated that health education had a strong positive effect on morticians' safety practices. The pretest grand mean score of 2.78 ± 0.59 increased substantially to 3.53 ± 0.53 at posttest, resulting in a mean difference of 0.75. The posttest grand mean exceeded the criterion mean of 2.50, confirming that the intervention significantly improved safety practices. Prior to the intervention, safety practices were generally moderate, with particularly low scores observed in critical areas such as use of PPE (2.48), emergency response actions (2.46), hand hygiene (2.45), and handling flood-exposed bodies with enhanced precautions (2.30). These findings indicate that morticians were insufficiently prepared to manage flood-induced health hazards safely before receiving health education.

Following the intervention, several safety practices reached the maximum posttest mean score of 4.00, indicating full adoption. These included inspecting drainage systems, disinfecting work areas, adhering to proper waste disposal, maintaining hand hygiene, monitoring for waterborne diseases, and handling flood-exposed bodies with enhanced precautions. Other practices, such as use of PPE, participation in training, ensuring ventilation, sealing body bags, and using temporary embalming methods, also showed significant improvement. The reduction in standard deviation at posttest further suggests that responses became more consistent, indicating improved uniformity in safety practices among morticians. This is a critical outcome, as consistent adherence to safety protocols is essential for reducing occupational health risks during flood events.

These findings are consistent with previous studies that demonstrated significant improvements in occupational safety practices following structured training and health education interventions (Afolayan et al., 2018; Ezejindu et al., 2021). The results further support the Health Belief Model, as increased knowledge and improved attitudes translated into observable behavioural change. Overall, the findings confirm that health education is a highly effective tool for improving safety practices among morticians in flood-prone environments.

The combined findings across the three research questions demonstrate that health education significantly improves knowledge, attitudes, and safety practices toward flood-induced health hazards among morticians. Knowledge gains were substantial, attitude improvements were moderate but consistent, and safety practice improvements were pronounced. This progression reflects the typical behaviour change pathway in health education, whereby increased knowledge leads to positive attitude change, which in turn facilitates adoption of safer practices. These findings highlight the urgent need to integrate structured health education into occupational health programs for morticians, particularly in flood-prone regions such as Rivers State. Such interventions can enhance disaster preparedness, reduce occupational health risks, and strengthen public health protection during and after flood events.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. Since the study found that morticians with fewer years of experience and lower education levels had less knowledge about flood-induced health hazards, it is recommended that regular health education sessions be organized. These sessions should be simplified, use demonstrations, and cover topics such as disease prevention, PPE use, and handling corpses during floods, so that morticians of all backgrounds can benefit.
2. The findings showed that health education improved attitudes, but some morticians, especially those in rural areas, still had weaker attitudes toward preventive measures. Therefore, health education programs should not only provide information but also include motivational activities and real-life examples to strengthen positive attitudes across all groups.
3. The study revealed significant improvement in safety practices after the intervention, but some practices like PPE use and proper waste disposal were not consistent. It is therefore recommended that safety practices be made part of daily mortuary routines, such as regular disinfecting, use of gloves and boots, and keeping proper hygiene records.

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