

Community-Directed Educational Intervention for Lassa Fever Prevention Practices Among Nursing Mothers Attending Primary Health Care Centres in Akinyele, Ibadan, Oyo State, Nigeria: A Quasi-Experimental Study

Happiness Opeyemi Agboola^{1,2#}, Ayodeji Amos Oladimeji², Adetoun Akinwusi¹

¹Department of Health Education, University of Ibadan, Ibadan
²Rural Nurture Initiative, Nigeria.

DOI: 10.29322/IJSRP.13.08.2023.p14012
<http://dx.doi.org/10.29322/IJSRP.13.08.2023.p14012>

Paper Received Date: 14th June 2023
Paper Acceptance Date: 23rd July 2023
Paper Publication Date: 6th August 2023

Author contributions

HOA and AA contributed to the study concept, design, analysis and interpretation of data. AAO participated in the acquisition of data, data analysis, drafting and editing of manuscript. AA supervised the study. All authors read, critically reviewed, and approved the final manuscript.

Conflicting interests

The authors declared that they had no conflicts of interest.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Abstract- Background: Lassa fever is a severe viral hemorrhagic disease, primarily prevalent in West Africa, and is transmitted when individuals come into contact with food contaminated by urine or feces from rodents, particularly rats. The key goal of Behavioral Change Communication (BBC) is to enhance knowledge and attitudes among individuals, families, communities, and health workers, ultimately promoting behavioral changes that can effectively prevent the spread of the disease. Therefore, this study aims to assess the effect of health education intervention on the knowledge and attitude towards prevention practices among nursing mothers in Akinyele, Ibadan, Oyo State, Nigeria.

Methods: The research study followed a pretest-posttest control group quasi-experimental research design, employing both an experimental group and a control group. The study was conducted in three distinct phases, which were the Pre-intervention, Intervention, and Post-Intervention phases. A multistage random sampling technique was used to select a total sample of 100 nursing mothers (50 in experimental group) and (50 in control group). The Statistical Package for Social Sciences (SPSS) version 20 was used to analyse the data collected while Multivariate analysis of Covariance (MANCOVA) was used to test the hypothesis at 0.05 alpha level.

Results: The result showed that there was a significant main effect of treatment on knowledge of nursing mothers towards Lassa fever prevention in Akinyele, Ibadan, Oyo State ($F(1,99) = 42.586, p < .05$). There was a significant main effect of treatment on the attitude of nursing mothers towards Lassa fever prevention in Akinyele, Ibadan, Oyo state ($F(1,99) = 38.428, p < .05$). There was also a significant main effect of educational level on knowledge of nursing mothers towards Lassa fever prevention in Akinyele, Ibadan, Oyo state ($F(1,99) = 21.503, p < .05$).

Conclusion: This study concludes that disease education towards Lassa fever prevention fostered the knowledge and attitude of nursing mothers in Akinyele, Ibadan, Oyo state. The intervention programme has greatly improved the knowledge and attitude of the mothers. Hence, Behavioural Change Communication (BBC) to ensure that individuals, families, communities and health workers are taking preventive measures to prevent disease is essential for community health promotion. Therefore, Public health education on Lassa fever prevention should be carried out in health centres nationwide.

Index Terms- Lassa fever, infection, Nigeria, disease education. Behavioural Change Communication

ABBREVIATIONS

ACDC - Africa Center for Disease Control and prevention

BCC - Behavioural Change Communication

KAP - Knowledge, Attitude and Practice

PHC – Primary Health Centers

NCDC - Nigerian Center for Disease

WHO - World Health Organization

I. INTRODUCTION

Lassa fever implies an acute viral haemorrhagic illness which is caused by Lassa virus, and it has a one per cent (1%) overall fatality case. It is transmitted by means of having contact with already contaminated food with rodents' or rats' urine or faeces (World Health Organization (WHO), 2022). Lassa fever is highly prevalent in West Africa, with an estimated range of one hundred thousand (100,000) to three hundred thousand (300,000) cases of Lassa virus infections reported annually. The disease leads to approximately five thousand (5,000) deaths each year, as per data from the Africa Center for Disease Control and Prevention (ACDC) in 2022. The World Health Organization (WHO) in 2022 confirms that countries such as Ghana, Benin, Liberia, Mali, Guinea, Sierra Leone, Togo, and Nigeria have endemic occurrences of Lassa fever. Furthermore, there is a possibility of the disease existing in other West African countries as well. This underscores the importance of effective surveillance and preventive measures throughout the entire region to combat the significant impact of Lassa fever on public health. of 19.4%. These cases were reported across 24 out of the 36 states in Nigeria, as well as in the Federal Capital Territory (Nigeria Center for Disease Control (NCDC), 2022).

Nigeria has experienced significant occurrences of Lassa fever outbreaks annually. However, the year 2020 saw the worst outbreak in the country's history. The outbreak placed an immense burden on the already overstretched healthcare system, straining resources and capabilities. Furthermore, this surge in Lassa fever cases had the potential to increase the overall morbidity and mortality from infectious diseases (Wada et al., 2022). The data underscores the urgent need for comprehensive and effective measures to combat Lassa fever in Nigeria. It is essential to strengthen surveillance and diagnostic capabilities to detect cases early and provide timely treatment. Additionally, raising awareness about preventive measures within communities can play a vital role in reducing the spread of the disease. Addressing the challenges posed by Lassa fever requires coordinated efforts from healthcare authorities, researchers, and the public to mitigate its impact on public health and prevent future outbreaks.

Previous empirical study carried out by Awosanya (2018) in Ibadan stated that the knowledge level on the role that rats take in the transmission of Lassa virus, general preventive measures, and early symptoms of Lassa fever among Ibadan residents are low. This aligns with the research conducted by Abdulkadir & Mohammed (2019), which revealed that a significant number of residents in Ibadan lack sufficient knowledge about the disease, making it challenging for them to prevent the outbreak from happening. Furthermore, Adegoke, Ajibola & Ogundairo (2017) stated that there is high level of awareness of Lassa fever but poor knowledge of it among the Ibadan Bodija market traders.

It is therefore important that campaigns and counseling should be carried out to create awareness about the disease, however, there is limited study focused on intervention on Lassa fever in Oyo State and her capital Ibadan despite empirical findings stating that there is low level of knowledge of the disease among Ibadan residents. The primary goal of Behavioral Change Communication (BBC) is to promote the adoption of preventive measures among individuals, families, communities, and health workers to prevent diseases. Additionally, BBC aims to enhance their awareness and understanding of early treatment, leading to improved health outcomes. (A Moran, 2013). Therefore, this study aims to assess the effect of

health education intervention on the knowledge and attitude towards Lassa fever prevention among nursing mothers in Akinyele, Ibadan, Oyo State, Nigeria.

II. METHODS

Study area

The study was carried out in Akinyele Local Government Area (LGA) of Oyo State, which is one of the eleven local government areas that make up Ibadan metropolis, the largest city in West Africa. Its headquarters are at Moniya. Akinyele LGA shares boundaries with Afijio LGA to the north, Lagelu LGA to the east, Ido LGA to the west and Ibadan North LGA to the south. It occupies a land area of 464.892 square kilometers with an estimated population of 239,745. The study areas are inhabited by people of mixed cultural background and languages predominantly Ijebu/Yorubas who are mostly farmers, planting cocoa, cassava, kolanuts etc., while some are engaged in small-scale businesses.

Material and methods

The study adopted a pretest-posttest control group quasi experimental research design. This design was used because the participants in the experimental and control group will not be randomly assigned to the groups. The study's design incorporates a comparison between two groups: the experimental group and the control group. The purpose is to assess the impact of the intervention on the performance of the experimental group. To prevent any potential interference, two political wards, one randomly selected from the southern axis (Ojoo) and the other from the northern axis (Moniya), were chosen to form the experimental and control groups, respectively. This geographical separation of about 12 km ensures that there is minimal cross-interference during and after the intervention periods. The study was conducted in three phases. The first phase, pre-intervention, involved a cross-sectional comparative descriptive study to establish a baseline understanding of the two groups. In the second phase, intervention, comprehensive health education was provided to the experimental group, while the control group received nutrition education. The third phase, post-intervention, involved a comparative study between the experimental and control groups to evaluate the outcomes after the intervention.

Pre-intervention activities

These included the following:

- The researchers obtained official permission from the Local Government Area (LGA) authorities to proceed with the project, indicating their compliance with regulations and ethical standards.
- Before the project began, the researchers obtained consent from the mothers of under-five children. This consent ensured their voluntary participation in all stages of the project.
- The questionnaires used in the study were pre-tested with research assistants. This pre-testing process helped identify any issues or challenges in the questionnaires. The research assistants shared their field experiences and provided feedback on how to improve the questionnaires.
- Based on the feedback received during the pre-testing phase, the researchers made necessary amendments to the questionnaires. They addressed any ambiguities or lack of clarity in the questions, leading to a redesign of those aspects.
- A baseline survey was conducted using the corrected questionnaires to assess the mothers' knowledge, attitude, and practices (KAP) related to Lassa fever prevention and management. This survey served as the pre-training assessment for the intervention group and the initial assessment for the control group.
- To collect data, a semi-structured questionnaire was used. Three selected and trained research assistants assisted in administering the questionnaire. The collected answers pertained to Lassa fever prevention. The training curriculum and programme was based on a course content adapted from the training manual for National Guidelines for Lassa Fever Case Management by NCDC 2018.

Subject selection

Inclusion Criteria: Nursing women having children that are less than five years old.

Exclusion Criteria: Mothers without under-five children and pregnant women below 6 months.

Intervention activities

The intervention comprised a well-structured educational program, which drew its content from the National Guidelines for Lassa Fever Case Management. The training was tailored to address the gaps in knowledge identified through the distributed questionnaire. During the training sessions, participants received comprehensive instruction on various aspects of Lassa fever management and control. Multiple health channels were utilized for the intervention, including a training workshop and the use of educational materials like posters and Lassa fever post signs. Two Lassa fever post signs

This publication is licensed under Creative Commons Attribution CC BY.

<http://dx.doi.org/10.29322/IJSRP.13.08.2023.p14012>

www.ijsrp.org

were prominently placed at the two Primary Health Centers (PHCs) to ensure easy visibility and access to information. Colorful posters displaying Lassa fever symptoms and signs, along with annotated diagrams for prevention and treatment, were also affixed at various locations within the health center. The training sessions were conducted for two months, with daily sessions lasting three hours from 12:00 pm to 3:00 pm. This comprehensive approach aimed to enhance participants' knowledge and understanding of Lassa fever, enabling better management practices and disease control within the community.

Post-intervention

The post-intervention assessment aimed to measure any lasting improvement in Knowledge, Attitude, and Practice (KAP) related to Lassa fever two months after the training and initial assessment were conducted in both the intervention and control groups. This assessment represented the evaluation conducted two months after the training. To analyze the effects of the training, standardized scores were employed for the different variables. Using standardized scores allowed for a consistent and objective comparison of the data. By utilizing this approach, the researchers could assess the effectiveness of the training in a quantifiable and standardized manner, enabling them to identify any significant changes in KAP among the participants.

Sampling technique

The study employed a multistage random sampling approach to select the required samples. Akinyele Local Government, comprising 12 political wards, was divided into two axes - the Northern axis with six wards and the Southern axis with the remaining six wards. Each political ward served as a cluster for the sampling. To determine whether the Northern or Southern axis would become the experimental or control group, a coin was tossed. After this decision, a ward was selected from each axis using a simple random sampling technique. This involved casting lots, balloting using papers of the same size that were thoroughly mixed, and then randomly picking one. From the selected wards, Ojoo and Moniya Primary Health Centers (PHCs) were purposively chosen due to their high number of nursing mother attendants. Subsequently, a simple random sampling technique was used to assign Ojoo PHC to the experimental group and Moniya PHC to the control group. A total of 100 volunteers participated in the study, with 50 individuals selected from each PHC.

Data collection technique

The same questionnaire, which participants completed themselves in some cases and with assistance in others, was utilized for both the experimental and control groups. The control group received a placebo regarding Nutrition Education. To collect data, a semi-structured questionnaire focused on Lassa fever-related Knowledge, Attitude, and Practice (KAP) was employed. Three specifically trained research assistants assisted in administering the questionnaire to participants from both the experimental and control groups. To ensure the questionnaires' effectiveness and the interviewers' proficiency, a pre-testing phase was conducted. Research assistants who had relevant field experiences were involved in the pre-testing and offered solutions to identified issues. Based on this feedback, necessary amendments were made, including the redesign of certain aspects of the questionnaire that were unclear or ambiguous. Pre-testing involved selecting thirty households from a nearby community to assess and refine the questionnaires' suitability and clarity before the main study was carried out.

Procedure for Data Collection

A letter of introduction was presented to the health centers for identification and to seek approval to carry out the study. A pretest was administered to the participants in both experimental and control groups using the questionnaire and were collected back immediately before the commencement of the training. The experimental group were exposed to eight weeks disease education intervention while the control group was given a placebo on nutrition education. Posttest was administered at the end of the training to the participants in the two groups using the same questionnaire. The responses were collected on the spot. The researcher was personally involved in the process along with five research assistants.

Data Analysis

The data was entered into SPSS statistical software version 20. Completed copies of the questionnaire was collected, coded and analyzed using descriptive statistics of frequency counts, pie chart and percentages were used to discuss the demographic information of the participants while inferential statistics of Multivariate Analysis of Covariance (MANCOVA) to test the hypotheses at 0.05 alpha level.

Ethical consideration

The research proposal was approved by Head of Department of Human Kinetics and Health Education, University of Ibadan. The letter was presented to the primary health centers for identification and to seek approval to carry out the study. Inform consent form was given to the participants after explaining the purpose and benefits of the study to them. The participants promised to fully cooperate and they were also assured of their freedom to opt out at any stage of the project.

This publication is licensed under Creative Commons Attribution CC BY.

<http://dx.doi.org/10.29322/IJSRP.13.08.2023.p14012>

www.ijssrp.org

The participants/respondents were assured of confidentiality and this assurance was indicated on the questionnaire (non inclusion of self identifying characteristics).

III. RESULTS

At the beginning of the study, a total of one hundred mothers/guardians of children under five years old participated in completing the questionnaire. These respondents were divided into two groups: the control group and the experimental (intervention) group. The control group consisted of fifty respondents, representing 50% of the total participants. After the 2-month intervention period, all fifty participants (100%) in the control group completed the questionnaire. Similarly, the experimental group also had fifty respondents, accounting for 50% of the total participants, and all fifty of them (100%) responded to the study questionnaires after the 2-month intervention period.

Hypotheses testing

This section presents the results of the tested hypotheses:

H01: There were no significant main effects of treatment on knowledge towards Lassa fever prevention among nursing mothers in Akinyele Local Government Area of Oyo State.

Table 1: Summary of MANCOVA on effect of treatment on participants Knowledge and Attitude towards Lassa fever prevention

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Squared	Eta
Corrected Model	Post knowledge	13026.351a	15	868.423	21.825	.000	.796	
	Post attitude	3012.278b	15	200.819	18.609	.000	.769	
Intercept	Post knowledge	577.587	1	577.587	14.516	.000	.147	
	Post attitude	199.585	1	199.585	18.495	.000	.180	
Pretest knowledge	Post knowledge	386.641	1	386.641	9.717	.002	.104	
	Post attitude	10.612	1	10.612	.983	.324	.012	
Pretest attitude	Post knowledge	5.092	1	5.092	.128	.721	.002	
	Post attitude	261.656	1	261.656	24.247	.000	.224	
Treatment	Post knowledge	1694.535	1	1694.535	42.586	.000	.336	

	Post attitude	414.693	1	414.693	38.428	.000	.314
Age	Post knowledge	241.737	3	80.579	2.025	.117	.067
	Post attitude	42.822	3	14.274	1.323	.272	.045

Educational level	Post knowledge	855.630	1	855.630	21.503	.000	.204
	Post attitude	168.833	1	168.833	15.645	.000	.157
Treatment * Age	Post knowledge	812.629	3	270.876	6.808	.000	.196
	Post attitude	177.029	3	59.010	5.468	.002	.163
Treatment * Educational Level	Post knowledge	121.051	1	121.051	3.042	.085	.035
	Post attitude	25.592	1	25.592	2.372	.127	.027
Age * Educational Level	Post knowledge	241.060	2	120.530	3.029	.054	.067
	Post attitude	48.457	2	24.228	2.245	.112	.051
Treatment * Age * Educational level	Post knowledge	28.441	2	14.220	.357	.701	.008
	Post attitude	13.702	2	6.851	.635	.533	.015
Error	Post knowledge	3342.399	84	39.790			
	Post attitude	906.472	84	10.791			
Total	Post knowledge	110925.000	100				
	Post attitude	39075.000	100				
Corrected Total	Post knowledge	16368.750	99				
	Post attitude	3918.750	99				

R Squared = .796 (Adjusted R Squared =.759)

R Squared = .769 (Adjusted R Squared =.727)

The results in table 1 shows that there was a significant main effect of treatment on knowledge of nursing mothers towards Lassa fever prevention in Akinyele Local Government Area of Oyo State ($F(1,99) = 42.586, p < .05$). Hence, the null hypothesis is rejected. The partial eta square of .336 indicated that the treatments of Lassa fever prevention education accounted for 33.6% of the observed variance on knowledge of Lassa fever prevention.

H02: There were no significant main effect of treatment on attitude towards Lassa fever prevention among nursing mothers in Akinyele Local Government Area of Oyo State.

The result in table 1 shows that there was a significant main effect of treatment on the attitude of nursing mothers towards Lassa fever prevention in Akinyele Local Government Area of Oyo State ($F(1,99) = 38.428, p < .05$). Hence, the null hypothesis is rejected. The partial eta square of .314 indicated that the treatments of Lassa fever prevention education accounted for 31.4% of the observed variance on attitude towards Lassa fever prevention among nursing mothers in Akinyele Local Government Area of Oyo State.

H03: There were no significant main effect of treatment of educational level on knowledge of Lassa fever prevention among nursing mothers in Akinyele Local Government Area of Oyo State

The results in table 1 shows that there was a significant main effect of educational level on knowledge of nursing mothers towards Lassa fever prevention in Akinyele Local Government Area of Oyo State ($F(1,99) = 21.503, p < .05$). Hence, the null hypothesis is rejected. The partial eta square of .204 indicated that the treatments of Lassa fever prevention education accounted for 20.4% of the observed variance on knowledge of Lassa fever prevention.

Table 2: Estimated Marginal Means of main effect of participants educational level on knowledge of Lassa fever Prevention

Level of education	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
No formal education	36.507	1.278	33.965	39.048
Formal education	28.126	1.393	25.356	30.895

The estimated mean Post-test scores of mothers with no formal education had the highest (36.507) and those with formal education had least mean score (28.126). Table 2 further revealed that the adjusted Post-test mean value across the groups.

H04: There were no significant main effect of educational level on attitude towards Lassa fever prevention among nursing mothers in Akinyele Local Government Area of Oyo State

The results from table 1 shows that there was a significant main effect of educational level on attitude of nursing mothers towards Lassa fever prevention in Akinyele Local Government Area of Oyo State ($F(1,99) = 15.645, p < .05, \eta^2 = .157$). Hence, the null hypothesis is retained. The partial eta square of .157 indicated that the treatments of Lassa fever prevention education accounted for 15.7% of the observed variance on attitude of nursing mothers towards Lassa fever prevention in Akinyele Local Government Area of Oyo State.

Table 3: Estimated Marginal Means of main effect of participants educational level on attitude towards Lassa fever Prevention

Level of education	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
No formal education	21.275	.666	19.952	22.599
Formal education	17.465	.725	16.023	18.908

The estimated mean Post-test scores of mothers with no formal education had the highest (21.275) and those with formal education had least mean score (17.465). Table 4.5 further revealed that the adjusted Post-test mean value across the groups.

H05: There is no significant two-way interaction effect of treatment and age on knowledge of Lassa fever prevention among nursing mothers in Akinyele Local Government Area of Oyo State.

The findings presented in Table 1 demonstrate a meaningful interaction between the treatment (Lassa fever prevention education) and the age of nursing mothers regarding their knowledge in Akinyele Local Government Area of Oyo State. The statistical analysis revealed a significant two-way effect of treatment and age on the nursing mothers' knowledge of Lassa fever prevention ($F(1,99) = 6.808, p < .05$). As a result, the null hypothesis is rejected, indicating that the Lassa fever prevention education had a noticeable impact on the participants' knowledge. The effect size, measured by partial eta square, was calculated to be .196, indicating that the Lassa fever prevention education accounted for 19.6% of the observed variance in the participants' knowledge of Lassa fever prevention. This implies that the age of nursing mothers played a role in influencing their knowledge of Lassa fever prevention, and the educational intervention had a considerable effect on their understanding.

Table 4: Estimated Marginal Means of interaction effects of Treatment and Age

Treatment	Age	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Control	18-25 years	27.761	1.560	24.659	30.862
	26-30 years	32.282	2.425	27.460	37.103
	31-40 years	19.530	1.744	16.062	22.997
	4.00	14.435	6.361	1.785	27.085
Experimental	18-25 years	37.657	2.084	33.512	41.802
	26-30 years	36.782	2.425	31.960	41.603
	31-40 years	40.076	1.333	37.425	42.728
	4.00	41.435	6.361	28.785	54.085

The estimated mean Post-test scores of mothers that were between 31 to 40 years was the highest (40.076), followed by mothers that were between 18 to 25 years (37.657) and mothers who are between 18 to 25 years had least mean score (36.782). Table 4.6 further revealed that the adjusted Post-test mean value across the groups.

H06: There is no significant two-way interaction effect of treatment and age on attitude towards Lassa fever prevention among nursing mothers in Akinyele Local Government Area of Oyo State.

The findings presented in Table 4 indicate a notable interaction between the treatment (Lassa fever prevention education) and the age of nursing mothers concerning their attitude in Akinyele Local Government Area of Oyo State. The statistical analysis revealed a significant two-way effect of treatment and age on the nursing mothers' attitude towards Lassa fever prevention ($F(1,99) = 5.468, p < .05$). Consequently, the null hypothesis is rejected, suggesting that the Lassa fever prevention education had a meaningful impact on the participants' attitude. The effect size, as measured by partial eta square, was calculated to be .163, indicating that the Lassa fever prevention education accounted for 16.3% of the observed variance in the participants' attitude towards Lassa fever prevention. This implies that the age of nursing mothers also played a role in influencing their attitude, and the educational intervention significantly contributed to shaping their perspective on Lassa fever prevention.

Table 5: Estimated Marginal Means of interaction effects of Treatment and Age on mothers' Attitude

Treatment	Age	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Control	18-25 years	17.416	.812	15.801	19.031
	26-30 years	19.147	1.263	16.636	21.658
	31-40 years	13.683	.908	11.878	15.489
	4.00	9.620	3.313	3.032	16.208
Experimental	18-25 years	21.637	1.085	19.479	23.796
	26-30 years	21.647	1.263	19.136	24.158
	31-40 years	23.036	.694	21.656	24.417
	4.00	24.620	3.313	18.032	31.208

The estimated mean Post-test scores of mothers’ attitude towards Lassa fever prevention in Akinyele Local Government exposed to disease education on Lassa fever prevention was higher in mothers that were between 31 to 40 years old (23.036), followed by mothers that were between 26 to 30 years old (21.647) and the least mean score was obtained by mothers of 18 to 25 years old (21.637). Table 5 further revealed that the adjusted Post-test mean value across the groups.

Table 6: Estimated Marginal Means of interaction effects of Treatment, Age and educational level on the Knowledge of Lassa fever prevention

Treatment	Age	Education	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Control	18-25 years	No formal education	33.594	2.415	28.791	38.397
		Formal	21.928	2.073	17.806	26.050
	26-30 years	No formal education	40.949	3.176	34.633	47.265
		Formal	23.615	3.752	16.154	31.075
	31-40 years	No formal education	21.692	3.197	15.334	28.050
		Formal	17.368	1.382	14.619	20.117
	4.00	No formal education				
		Formal	14.435	6.361	1.785	27.085
Experimental	18-25 years	No formal education	40.787	3.669	33.491	48.083
		Formal	34.528	2.073	30.406	38.650
	26-30 years	No formal education	40.949	3.176	34.633	47.265
		Formal	32.615	3.752	25.154	40.075
	31-40 years	No formal education	41.070	2.269	36.559	45.582
		Formal	39.082	1.382	36.333	41.831

Table 6 shows the estimated marginal means of the interaction effects of treatment, age and educational level on the knowledge of Lassa fever prevention. This describes the magnitude of estimated Post-test mean scores between the groups. From this table, it can be observed that the mean scores of nursing mothers exposed to disease education on Lassa fever prevention was higher than participants in Control group. Mothers that were between age 31 to 40 years with no formal education had the highest mean score (41.070), followed by with mothers who are between 26 to 30 years’ old who are not educated (40.949). The least mean score was obtained from the control group of age group 31 to 40 without formal education.

Table 7: Estimated Marginal Means of interaction effects of Treatment, Age and educational level on the Attitude towards Lassa fever prevention

Treatment	Age	Education	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Control	18-25 years	No formal education	19.881	1.258	17.379	22.382

		Formal	14.951	1.080	12.804	17.098
	26-30 years	No formal education	23.348	1.654	20.059	26.637
		Formal	14.945	1.954	11.060	18.830
	31-40 years	No formal education	14.484	1.665	11.173	17.795
		Formal	12.883	.720	11.452	14.315
	4.00	No formal education
		Formal	9.620	3.313	3.032	16.208
Experimental	18-25 years	No formal education	22.924	1.911	19.125	26.724
		Formal	20.351	1.080	18.204	22.498
	26-30 years	No formal education	23.348	1.654	20.059	26.637
		Formal	19.945	1.954	16.060	23.830
	31-40 years	No formal education	23.666	1.181	21.316	26.015
		Formal	22.407	.720	20.975	23.838

Table 7 shows the estimated marginal means of the interaction effects of treatment, age and educational level on the Attitude towards Lassa fever prevention.

This describes the magnitude of estimated Post-test mean scores on mothers' attitude between the experimental and control groups. From this table, it can be observed that the mean scores of nursing mothers exposed to disease education on Lassa fever prevention was higher than participants in Control group. Mothers that were between age 31 to 40 years with no formal education had the highest mean score (23.666), followed by with mothers who are between 26 to 30 years' old who are not educated (23.348). The least mean score (12.883) was obtained from the control group of age group 31 to 40 without formal education.

IV. DISCUSSION

The primary objective of this study was to evaluate the impact of a health education intervention on the knowledge and attitude towards Lassa fever prevention among nursing mothers in Akinyele, Ibadan, Oyo State, Nigeria. According to the data presented in the above table, a significant main effect of educational level on the knowledge of nursing mothers concerning Lassa fever prevention was observed. This indicates that the disease education had a more pronounced effect on the knowledge of Lassa fever prevention in the experimental group compared to the control group. In other words, there was a substantial difference between the experimental and control groups in terms of their knowledge. The results further revealed that the educational level of the mothers significantly influenced their knowledge of Lassa fever prevention. Similarly, there was a significant main effect of educational level on the attitude of nursing

mothers towards Lassa fever prevention in Akinyele Local Government Area of Oyo State. This suggests that the health education intervention had a significant impact on shaping the attitude of nursing mothers towards Lassa fever prevention, and their level of education played a crucial role in influencing their attitude. Attitudes, which represent people's overall evaluation of another person, object or situation, is closely related with Knowledge. An individual's knowledge will help to develop a positive or negative attitude towards a situation. In relation to Lassa fever infection, these scenarios occur amidst population with low awareness and poor hygiene practices, thereby providing harborage for the rats, agent for Lassa fever infection (Adegoke, Ajibola & Ogundairo, 2017). This implies that nursing mothers who are more educated tends to have better attitude towards the prevention of Lassa fever when compared to their counterparts with less form of education. According to Asogun et al. (2012) in their research conducted at Irrua Specialist Teaching Hospital, Nigeria, they found a connection between the level of education and the awareness and knowledge of Lassa fever. Similarly, Lalaye (2018) conducted a study on Lassa fever prevention in Ose Local Government of Ondo State, and their findings align with the notion that the training provided significantly enhanced the participants' knowledge, making them better prepared to prevent the spread of Lassa fever in their local community.

This result further revealed that the disease education on Lassa fever prevention was most effective on attitude of mothers who are between the age group of 31 and 40 years. It implies that nursing mothers between ages 31-40 exhibit better attitude towards the prevention of Lassa fever when compared with others who are of different age bracket. This finding is consistent with the research conducted by Ekanem et al. (2018) in their study on Knowledge and Prevention of Lassa fever among Adults in a Rural Community in Southern Nigeria. Their study also demonstrated a significant correlation between the ages of respondents and their knowledge of Lassa fever. Younger individuals (under 40 years old) exhibited higher levels of knowledge about Lassa fever compared to older individuals. This might be because younger people have more time and access to Lassa fever information sources including the internet, print media, and electronic media. According to Awosanya (2018), Age is a moderating variable that can influence health seeking behaviour. The years of experience of mothers can help to make informed choice of where to receive treatment and how to avoid illness (Chandra et al., 2021).

This study also observed that that there was no significant three-way effect of Treatment, age and educational level on knowledge of Lassa fever prevention. This means that mothers' age and level of education did not influence their knowledge of Lassa fever prevention in Akinyele Local Government Area. This however, negates the findings and conclusion of Ekanem Anyiekere Morgan et al., (2018) who stated that greater emphasis should be placed on the older population so as to adequately enlighten them about the disease. However, it supports the view of Adegoke, Ajibola & Ogundairo (2017) who stated that there was no significant association between level of education and awareness and knowledge of Lassa fever. Nevertheless, risk reduction of exposure to Lassa fever, through disease education to promote improved behavioral change, in the context of improved housekeeping; safe food processing/storage practices, environmental sanitation; frequent clearance and safe disposal of unserviceable household goods, rat-proofing of human habitats and occupational environments is advocated (Chandra et al., 2021). Hence, continuous campaigns and counselling about Lassa fever awareness is important for nursing mothers in Nigeria.

V. CONCLUSION

The study emphasizes the continued threat of Lassa fever to public health in Nigeria, necessitating collaborative efforts to address and disseminate crucial information about the disease's causes, transmission modes, symptoms, and prevention practices. This research, focused on nursing mothers attending primary health care centers in Akinyele, Ibadan, Oyo State, reveals that disease education significantly improved their knowledge and attitudes regarding Lassa fever prevention. The intervention program had a substantial positive impact, leading to notable enhancements in the nursing mothers' knowledge and attitudes. Notably, the level of education of the mothers played a significant role in influencing their knowledge. Therefore, the implementation of Behavioral Change Communication (BBC) strategies becomes crucial to promote preventive measures and community health. Based on the study's findings, it is recommended that public health education on Lassa fever prevention be conducted in health centers nationwide. Such initiatives will contribute to empowering individuals, families, communities, and health workers to adopt preventive measures effectively, thus combatting the spread of Lassa fever and safeguarding public health in Nigeria.

REFERENCES

- [1] World Health Organization (WHO), 2022. Lassa fever, Retrieved from https://www.who.int/health-topics/lassa-fever#tab=tab_1 Accessed 12th July, 2022.
- [2] Africa Center for Disease Control and prevention (ACDC), (2022). Lassa Fever. Retrieved from <https://africacdc.org/disease/lassa-fever/> Accessed 12th July, 2022.
- [3] Nigeria Center for Disease Control (NCDC), (2022). Lassa fever Situation Report. Retrieved from file:///C:/Users/gabriel/Downloads/An%20update%20of%20Lassa%20fever%20outbreak%20in%20Nigeria_160622_25.pdf Accessed 12th July, 2022.
- [4] Wada, Y., Ogunyinka, I., Yusuff, K., Ochu, C., Yahaya, M., & Khalid, G. et al. (2022). Knowledge of Lassa fever, its prevention and control practices and their predictors among healthcare workers during an outbreak in Northern Nigeria: A multi-centre cross-sectional assessment. *PLOS Neglected Tropical Diseases*, 16(3), e0010259. doi: 10.1371/journal.pntd.0010259

- [5] Awosanya, E. J. 2018. Post-epidemic awareness and knowledge of Lassa fever among residents in affected community in Ibadan, Oyo State, Nigeria, *Veterinary World*, 11(8): 1059- 1063.
- [6] Abdulkadir S, & Mohammed, A.S. 2019. Assessment of knowledge of Lassa fever among residents in North-Eastern Nigeria. *Int J Health Sci Res.* 2019; 9(2):197-202.
- [7] Adegoke, O. O., Ajibola, F. & Ogundairo, J. 2017. Knowledge, Attitude and Practices of Foodstuff Sellers on Lassa Fever In Major Markets In Ibadan. *African journal for the psychological study of social issues* pg. 165. Vol.20 No.2 2017 AJPSSI
- [8] Amoran, O. (2013). Impact of health education intervention on malaria prevention practices among nursing mothers in rural communities in Nigeria. *Nigerian Medical Journal*, 54(2), 115. doi: 10.4103/0300-1652.110046
- [9] Asogun D.A, Adomeh D.I, Ehimuan J, Odia I, Hass M, Gabriel M, Ölschläger S, Becker-Ziaja B, Folarin O, Phelan E, Ehiane P.E. Molecular diagnostics for Lassa fever at Irrua specialist teaching hospital, Nigeria: Lessons learnt from two years of laboratory operation. *PLoS Negl. Trop. Dis.* 2012;6:e1839.
- [10] Laleye, I. O. 2018. Disease Education on Knowledge and attitude towards Lassa fever prevention among senior secondary school in Ose Local Government Area of Ondo state. MEd Health Education Dissertation, University of Ibadan, Ibadan, Nigeria
- [11] Chandra, N., Bolt, H., Dan-Nwafor, C., Ipadeola, O., Ilori, E., & Namara, G. et al. (2021). Factors associated with delayed presentation to healthcare facilities for Lassa fever cases, Nigeria 2019: a retrospective cohort study. *BMC Infectious Diseases*, 21(1). doi: 10.1186/s12879-021-05822-4
- [12] Ekanem, A., Ekwere., T., Akwaowo, C., Akpanekpo, E., Mfon, M. E., Anietie, M.H., Sylvester, U.J., Utibesamuel, A., (2018). Knowledge and Prevention of Lassa fever among Adults in a Rural Community in Southern Nigeria. *Journal of Medicine and the Person* 3(7):393-399 DOI:10.21276/sjm.2018.3.7.9

AUTHORS

First Author – Happiness Opeyemi AGBOOLA, Department of Health Education, University of Ibadan, Ibadan

Second Author – Ayodeji Amos OLADIMEJI, Rural Nurture Initiative, Nigeria.

Third Author – Adetoun AKINWUSI, Department of Health Education, University of Ibadan, Ibadan

Correspondence Author – Happiness Opeyemi AGBOOLA, happyagboola7@gmail.com, +2348168579398, No. 20. Kengbe Street, Alakia, Isebo, Ibadan, Nigeria