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Research Article

Level of Health Educational Exposure on Non-Communicable Diseases among Residents in Rivers South-East Senatorial District, Nigeria

Henrietta Elechi Ubojiekere [1*], Boma Judith Fubara [1], Queen Desmond Atuzie [1], Anthony Ike Wegbom [1] and Samuel Gentle Kitoye [2]

[1] *Department of Public Health, Rivers State University, Nkpolu-Oroworukwo, Port Harcourt, Rivers State, Nigeria.*
[2] *Department of Human Kinetic Health and Safety, Ignatius Ajuru University of Education, Rivers State, Port Harcourt.*
[*] *Corresponding author: ubojiekere.henrietta@rsu.edu.ng*

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Abstract

This study assessed the level of Health educational exposure on non-communicable diseases (NCDs) among residents of Rivers South-East Senatorial District, Nigeria. A quantitative cross-sectional survey design was adopted, involving 386 respondents aged 40 years and above across seven Local Government Areas. Data were collected using a structured questionnaire and analysed using frequencies, percentages and Pearson's chi-square test. The findings reveal that respondents had a mean age of 50.2 ± 9.5 years, with the largest proportion aged 40–49 years (50.7%). Females constituted 52.8% of the respondents, 64.2% were married, 40.4% had secondary education, and 59.1% were employed. Regarding educational exposure, 62.2% of respondents were classified as having high exposure to health education on NCDs, while 37.8% had low exposure. High exposure was relatively consistent across age groups, sex, marital status, educational attainment and employment status. However, no statistically significant association was found between the level of educational exposure and any of the socio-demographic characteristics examined. Findings of the study further revealed that community health outreach was the most frequently reported source of NCD-related health education (65.4%), followed by primary health centres (54.2%) and community meetings (46.8%). The findings indicate that health education has reached a considerable proportion of residents, although substantial gaps in exposure remain. The study recommends an increase in the regular occurrence of community health education sessions by government and health organizations to enhance health educational exposure and improved knowledge retention amongst community members.

1. Introduction

Non-communicable diseases (NCDs) are a major public health concern in Nigeria and the globe at large, making the reach of prevention messages an important consideration in health service planning. The World Health Organization estimated that NCDs caused at least 43 million deaths in 2021 and identified cardiovascular disease, cancer, chronic respiratory disease and diabetes among the principal contributors [1]. Modifiable exposures such as tobacco use, unhealthy diets, physical inactivity and harmful alcohol consumption increase NCD risk,

creating opportunities for preventive communication alongside clinical services [1]. The present study, however, concerns residents' reported exposure to health educational activities rather than measurement of changes in risk factors or disease incidence.

The Nigerian public health context reinforces the importance of prevention of NCDs. A systematic analysis estimated that age-adjusted adult hypertension prevalence increased between 1995 and 2020, while awareness, treatment and control remained inadequate [2]. The WHO Package of Essential Non-communicable Disease Interventions recommends integrating risk assessment, health education, lifestyle counselling and follow-up within primary healthcare, particularly where resources are constrained [3]. These recommendations provide a rationale for community education while leaving open the empirical question of which residents receive the messages and through which channels.

Educational exposure is an important programme delivery outcome in its own right. The RE-AIM framework explicitly identifies programme reach as a distinct dimension of public health impact, separate from effectiveness, adoption, implementation and maintenance [4]. A systematic review associated limited health literacy with difficulties interpreting health information and with less favourable healthcare utilisation and selected health outcomes, supporting the importance of understandable health education [5]. Consequently, describing exposure across educational and socioeconomic groups can help identify possible gaps, but does not by itself determine whether recipients understood or acted on the information.

Community-based delivery may extend NCD information beyond conventional clinical encounters. A systematic review found that community health workers could contribute to NCD prevention and control through counselling, risk communication, screening related activities and follow-up in low- and middle-income settings [6]. A separate systematic review of community-based cardiovascular interventions reported improvements in knowledge of cardiovascular risk factors and in selected physical activity and dietary behaviours, although findings for smoking and alcohol were less consistent [7]. These intervention outcomes demonstrate potential benefits of education exposure.

A review of community health worker interventions for hypertension management in low- and middle-income countries documented a range of approaches intended to support blood-pressure care, illustrating the breadth of tasks delivered outside physician led encounters [8]. A systematic review of training for community health workers in cardiometabolic prevention and control identified variation in training characteristics and reported outcomes, emphasising that programme content and workforce preparation matter for implementation [9]. Thus, reporting only whether individuals have heard an NCD prevention message may not adequately describe the intensity, provider or format of their exposure.

A study from Nigeria further motivates the examination of educational access. In a quasi-experimental study among retirees in Enugu State, a structured hypertension health education intervention improved knowledge and several reported prevention and self-care practices relative to the comparison group [10, 11].

Equity in programme reach is another relevant issue. A systematic review of community health-worker programmes in low- and middle-income countries found that such programmes can reach many disadvantaged groups, including populations facing educational or socioeconomic disadvantage [12]. The same review found that reaching disadvantaged populations did not consistently translate into equitable health behaviours or outcomes and that some marginalised groups remained underserved [12]. Assessing patterns of educational exposure by age, sex, schooling, employment, household characteristics and local government area is therefore useful for describing the reach without assuming equal effectiveness.

The channels used to deliver information may also create opportunities for educational exposure. A Nigerian study of cardiovascular health communication identified healthcare workers as a preferred information source and described roles for healthcare facilities, faith-based organisations, traditional media and community organisations in communication [13–15]. That study also identified language barriers, poverty and limited knowledge as obstacles to community health communication, supporting attention to locally understandable messaging [13]. These observations justify investigating community outreach, primary healthcare centres, religious gatherings, meetings, radio and other reported information sources in Rivers South East Senatorial District.

Repeated participation in health education programmes may depend on more than message availability. A review of group chronic disease self-management programmes identified competing commitments, logistics, service provision and group-related factors among influences on enrolment and attendance [16, 17]. A systematic review of transportation interventions among people living with chronic conditions showed why transport barriers warrant attention in strategies intended to improve access to continuing services [18]. Those studies concern self-management or care participation, not directly the exposure measure used here, but offer relevant operational considerations.

A systematic review and meta regression found that community-based cardiovascular prevention programmes could improve physical activity during earlier follow-up periods, with diminishing intervention effects over longer follow-up [19]. Taken together, the literature distinguishes the reach of education, the participation of intended audiences and the eventual effects of interventions. Existing publications do not directly quantify the self-reported level of NCD-related community-education exposure in the seven LGAs of Rivers South-East Senatorial District. Accordingly, this study was carried out to determine level health educational exposure among residents of Rivers South-East Senatorial District in Nigeria aged 40 years and above and to describe the variations by selected socio-demographic and geographical characteristics and identify channels through which residents received NCD-related information. The study provides descriptive and associational information; it does not determine that exposure caused changes in knowledge, health behaviour or NCD outcomes.

2. Methodology

2.1. Study Design

A quantitative cross sectional survey design was used. The study was conducted in Rivers South-East Senatorial District, Rivers State, Nigeria, covering Andoni, Eleme, Gokana, Khana, Opobo/Nkoro, Oyigbo and Tai LGAs. It assessed residents' reported exposure to health education and examined the distribution of health educational exposure across selected sociodemographic characteristics. Data were collected at a single point in time.

2.2. Study population and sampling procedure

The study included male and female residents aged 40 years and above. The sample of 386 respondents was used with the sample-size calculation based on Cochran's formula. Participants were selected from the seven Local Government Areas in Rivers South-East Senatorial district.

2.3. Data collection

Data were collected using a structured questionnaire developed for this study. It covered socio-demographic characteristics and exposure to NCD-related health education, alongside other study variables. The instrument was reviewed by the research supervisor, pilot-tested among people with similar characteristics, and assessed for internal consistency; Cronbach's alpha was 0.79.

2.4. Data analysis

Frequencies and percentages were used to describe educational exposure and reported sources of information. Pearson's chi-square test was used to examine associations between educational exposure category and selected socio-demographic characteristics. Statistical significance was set at $p < .05$.

2.5. Ethics

Ethical approval was gotten from the Research Ethics Committee of the Faculty of Basic Medical Sciences, Rivers State University, Nigeria. Eligible participants provided informed consent.

3. Results

Table 1 shows that the respondents had a mean age of 50.2 ± 9.5 years, with the largest proportion aged 40–49 years. Females slightly outnumbered males, and the majority of respondents were married, had secondary education, and were employed. Orthodox Christianity was the most commonly reported religious affiliation, while Khana LGA contributed the largest proportion of respondents. Most respondents lived in households of 4–6 persons, had 3–5 dependants, and belonged to the middle wealth-index category.

Table 2 shows that nearly two-thirds of respondents had high educational exposure to community-based health education on non-communicable diseases. High exposure was relatively similar across age groups, sex, marital status, educational levels, and employment status. However, it was highest among respondents who practised traditional religion and those from households with ten or more members. Across the LGAs, Andoni and Gokana recorded relatively high exposure, while Opobo and Oyigbo had the lowest proportions.

Table 3 shows that high educational exposure to community-based health education was more common than low exposure across all the socio-demographic categories examined. However, there was no statistically significant association between educational exposure and any of the socio-demographic characteristics, including age, sex, marital status, educational level, employment status, religion, LGA, residence, household size, and number of dependants (all p-values > 0.05).

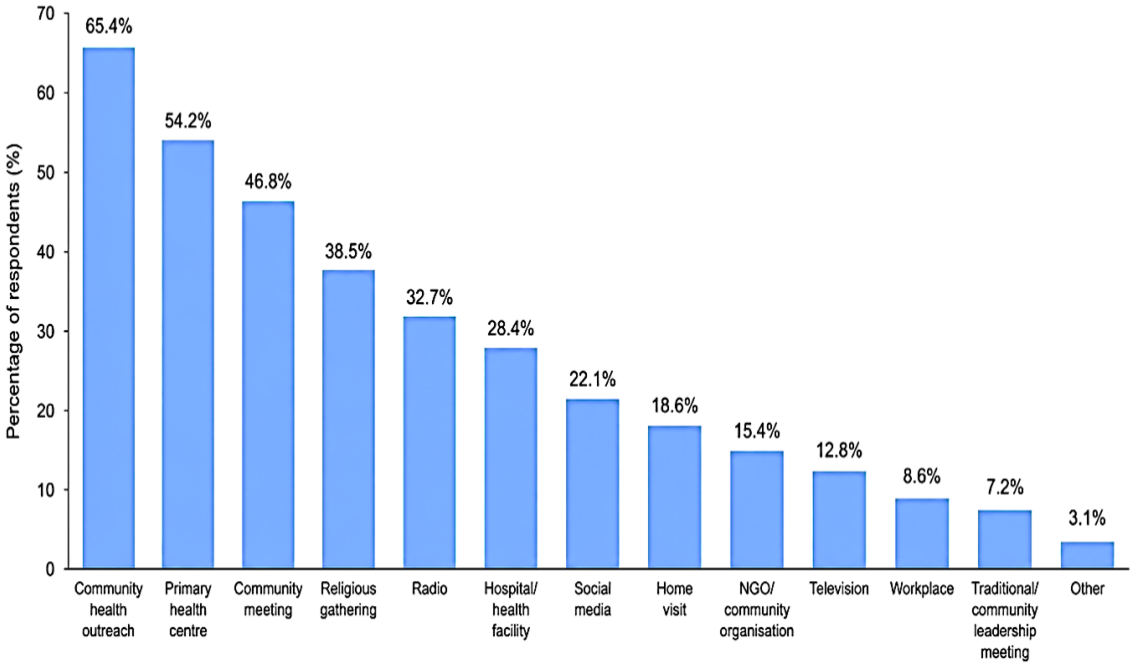


Figure 1: Sources of Non-communicable Disease health Education

Figure 1 shows that community health outreach was the most common source of community-based health education on non-communicable diseases, followed by primary health centres and community meetings. Religious gatherings and radio were also important sources of information. In contrast, traditional or community leadership meetings, workplaces, and other sources were among the least reported.

Table 1: Frequency Distribution of Respondents' Socio-Demographic Characteristics

Characteristics	**Frequency**	**Percentage**
Age Group (years)	(f)	(%)
40–49	196	50.7
50–59	112	29.1
60+	78	20.2
Mean ± SD	**50.2 ± 9.5**	
Sex		
Male	182	47.2
Female	204	52.8
Marital Status		
Married	248	64.2
Not currently married	138	35.8
Educational Level		
No formal education	52	13.5
Primary	94	24.4
Secondary	156	40.4
Tertiary	84	21.8
Employment Status		
Employed	228	59.1
Unemployed	158	40.9
Religion		
Orthodox	176	45.6
Pentecostal	34	8.8
Traditional	52	13.5
Islam	26	6.7
Others	98	25.4
LGA of Residence		
Andoni	48	12.4
Eleme	44	11.4
Gokana	75	19.4
Khana	83	21.5
Opobo/Nkoro	48	12.4
Oyigbo	44	11.4
Tai	44	11.4
Household Size		
1–3 persons	62	16.1
4–6 persons	168	43.5
7–9 persons	102	26.4
10+ persons	54	14
Number of Dependants		
None	28	7.3
1–2	116	30.1
3–5	154	39.9
6+	88	22.8
Wealth Index of Respondents Index		
Poor	78	20.2
Middle	276	71.5
Rich	32	8.3
Total	**386**	**100**

Figure 2 shows that health workers were the most commonly reported source of health information, followed by radio/television, while social media was the least reported source.

Table 2: Educational exposure by selected socio-demographic characteristics

Social Demographics	High n (%)	Low n (%)	95% C.I.
Overall	**240 (62.2)**	**146 (37.8)**	**57.2–66.9**
Age group			
40–49 years	90 (60.8)	58 (39.2)	52.8–68.3
50–59 years	70 (62.5)	42 (37.5)	53.3–70.9
60+	80 (63.5)	46 (36.5)	54.8–71.4
Sex			
Female	129 (63.2)	75 (36.8)	56.4–69.6
Male	111 (61.0)	71 (39.0)	53.7–67.8
Marital status			
Married	152 (61.3)	96 (38.7)	55.1–67.1
Not currently married	88 (63.8)	50 (36.2)	55.5–71.3
Level of education			
No formal education	31 (59.6)	21 (40.4)	46.1–71.8
Primary education	56 (59.6)	38 (40.4)	49.5–68.9
Secondary education	100 (64.1)	56 (35.9)	56.3–71.2
Tertiary education	53 (63.1)	31 (36.9)	52.4–72.6
Employment status			
Employed	141 (61.8)	87 (38.2)	55.4–67.9
Not employed	99 (62.7)	59 (37.3)	54.9–69.8
Religion			
Pentecostal	105 (59.7)	71 (40.3)	52.3–66.6
Orthodox	59 (60.2)	39 (39.8)	50.3–69.3
Islam	36 (69.2)	16 (30.8)	55.7–80.1
Traditional	26 (76.5)	8 (23.5)	60.0–87.6
Others	14 (53.8)	12 (46.2)	35.5–71.2
Overall	**240 (62.2)**	**146 (37.8)**	**57.2–66.9**
LGA			
Andoni	32 (66.7)	16 (33.3)	52.5–78.3
Eleme	30 (68.2)	14 (31.8)	53.4–80.0
Gokana	50 (66.7)	25 (33.3)	55.4–76.3
Khana	49 (59.0)	34 (41.0)	48.3–69.0
Opobo	26 (54.2)	22 (45.8)	40.3–67.4
Oyigbo	24 (54.5)	20 (45.5)	40.1–68.3
Tai	29 (65.9)	15 (34.1)	51.1–78.1
Household Size			
1–3 persons	38 (61.3)	24 (38.7)	48.8–72.4
4–6 persons	105 (62.5)	63 (37.5)	55.0–69.5
7–9 persons	58 (56.9)	44 (43.1)	47.2–66.1
10 persons and above	39 (72.2)	15 (27.8)	59.1–82.4
Number of Dependents			
None	19 (67.9)	9 (32.1)	49.3–82.1
1–2	68 (58.6)	48 (41.4)	49.5–67.2
3–5	97 (63.0)	57 (37.0)	55.1–70.2
6+	56 (63.6)	32 (36.4)	53.2–72.9
None	19 (67.9)	9 (32.1)	49.3–82.1

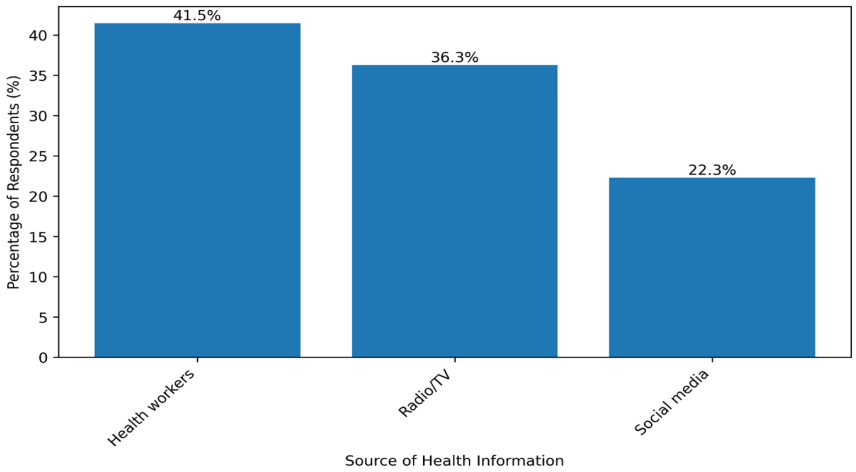


Figure 2: Providers of Health Education Received by Respondents (Multiple Response Analysis)

Table 3: Distribution and Association of Respondents' Socio-Demographic Characteristics with Level of Educational Exposure

Social Demographics	High n (%)	Low n (%)	95% CI	χ^2	df	p-value
Overall	240 (62.2)	146 (37.8)	57.2–66.9	—	—	—
Age Group				0.215	2	0.898
40–49 years	90 (60.8)	58 (39.2)	52.8–68.3			
50–59 years	70 (62.5)	42 (37.5)	53.3–70.9			
60+	80 (63.5)	46 (36.5)	54.8–71.4			
Sex				0.206	1	0.65
Female	129 (63.2)	75 (36.8)	56.4–69.6			
Male	111 (61.0)	71 (39.0)	53.7–67.8			
Marital Status				0.231	1	0.63
Married	152 (61.3)	96 (38.7)	55.1–67.1			
Not currently married	88 (63.8)	50 (36.2)	55.5–71.3			
Level of education				0.692	3	0.875
Employment status				0.026	1	0.871
Religion				5.458	4	0.243
LGA				4.737	6	0.578
Residence				0.615	2	0.735
Household size				3.57	3	0.312
Number of dependants				1.131	3	0.77

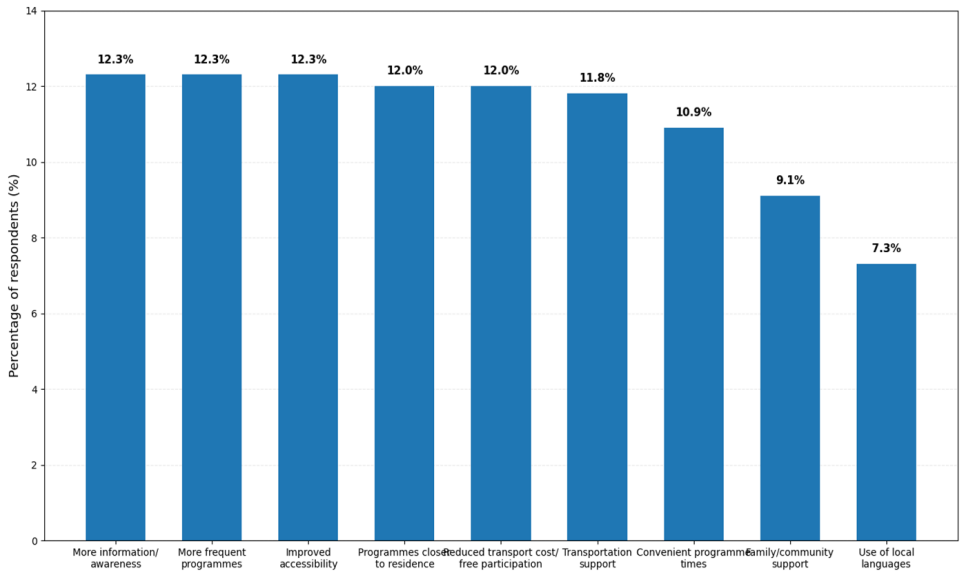


Figure 3: Respondents' Perceived Factors That Could Facilitate Participation In Community-Based NCD Health Education

Figure 3 shows that respondents most commonly identified the need for increased information and awareness, more frequent programmes,

and improved accessibility as measures for strengthening community-based health education. Other important suggestions included holding programmes closer to residents, reducing transportation costs, and improving transportation support. Convenient programme times, family and community support, and the use of local languages were less frequently reported.

4. Discussion

This study examined reported educational exposure to community-based health education on non-communicable diseases among 386 adults in Rivers South-East Senatorial District. Respondents had a mean age of 50.2 ± 9.5 years; females slightly outnumbered males, and the majority were married, employed and in the middle wealth-index category. These characteristics provide context for interpreting the coverage of NCD-related education but do not independently establish the determinants of exposure. The study found that 240 respondents (62.2%) had received NCD-related health education, while 146 respondents (37.8%) had not received any NCD education. Among respondents who reported exposure to NCD education, the findings showed varying levels of exposure, with 38.8% reporting moderate exposure, 31.3% reporting low exposure, and 30.0% reporting high exposure. This indicates that although community-based NCD health education had reached a considerable proportion of residents, exposure was not uniform, and a substantial proportion of respondents experienced limited or inadequate engagement with health education activities. The finding suggests that the availability of community-based NCD education does not necessarily imply adequate coverage or sustained engagement. Exposure to health information may occur without sufficient frequency, depth, or continuity to support long-term knowledge retention and behavioural modification. This observation is consistent Okafor & Umeh [20], Ozoemena et al. [10] and Ahmed et al. [12] who reported that NCD awareness initiatives in Nigerian communities have achieved some level of population reach but are often affected by irregular implementation and inadequate continuity. Similarly, Onwujekwe [21] noted that health education interventions in Nigeria are frequently delivered intermittently, limiting opportunities for reinforcement and sustained adoption of preventive behaviours.

Furthermore, the findings show that 240 (62.2%) respondents had high educational exposure, while 146 (37.8%) had low educational exposure, with an overall 95% confidence interval of 57.2–66.9%. This indicates that a greater proportion of respondents experienced a high level of educational exposure. The chi-square test results show that none of the assessed socio-demographic characteristics had a statistically significant association with educational exposure at the 5% significance level, suggesting that educational exposure was relatively distributed across the different socio-demographic groups.

The association between age group and educational exposure was not statistically significant. This suggests that age differences did not significantly influence respondents' likelihood of having high or low educational exposure. Also, females recorded a slightly higher proportion of high educational exposure compared with males. Among females, 129 (63.2%) had high educational exposure, while 111 (61.0%) males had high exposure. The association between sex and educational exposure was not statistically significant. This indicates that both male and female respondents had comparable levels of access to health education opportunities. For marital status, respondents who were not currently married had a slightly higher proportion of high educational exposure (88; 63.8%) compared with married respondents (152; 61.3%). However, marital status was not significantly associated with educational exposure. This implies that marital status did not substantially influence exposure to health education among the respondents. With respect to level of education, although some variations were observed, educational exposure did not significantly differ across educational categories. Respondents with secondary education had a high educational exposure of 64.1%, followed by those with tertiary education (63.1%), while respondents with no formal education and primary education recorded 59.6% each. The finding suggests that health education exposure was not restricted to individuals with higher formal education, indicating that health education activities may have reached respondents across different educational backgrounds. Regarding employment status, employed respondents recorded 141 (61.8%) high educational exposure, while unemployed respondents recorded 99 (62.7%) high exposure. The association between employment status and educational exposure was not statistically significant. This suggests that employment status did not influence respondents' exposure to health education.

For religious affiliation, differences were observed in the proportion of respondents with high educational exposure. Respondents practising Traditional religion recorded the highest proportion of high exposure (76.5%), followed by Islam (69.2%), Orthodox Christianity (60.2%), Pentecostal Christianity (59.7%), and Others (53.8%). However, the association between religion and educational exposure was not statistically significant ($\chi^2 = 5.458$, df = 4, p = 0.243). This indicates that although variations existed between religious groups, these differences were not statistically meaningful. Across Local Government Areas (LGAs), educational exposure varied slightly among respondents. The association between LGA of residence and educational exposure was not statistically significant. This implies that respondents across the different LGAs had relatively similar levels of educational exposure despite geographical differences.

The association between household size and educational exposure was not statistically significant. This indicates that household composition did not significantly influence educational exposure. Regarding the number of dependants, respondents with no dependants recorded the highest proportion of high educational exposure (19; 67.9%), followed by those with 6 or more dependants (56; 63.6%), respondents with 3–5 dependants (97; 63.0%), and those with 1–2 dependants (68; 58.6%). The association between number of dependants and educational exposure was not statistically significant ($\chi^2 = 1.131$, df = 3, p = 0.770).

Summarily, the findings of this study shows that educational exposure was generally high among respondents, with approximately two-thirds of participants reporting high exposure. Although variations were observed across age groups, sex, marital status, educational attainment, religion, LGA, residence, household size, and number of dependants, none of these socio-demographic characteristics showed a statistically significant relationship with educational exposure. This suggests that health education exposure was broadly distributed across the study population rather than concentrated within specific socio-demographic groups. Subsequent analyses are therefore required to determine whether educational exposure is associated with NCD knowledge, preventive practices, lifestyle behaviours, and NCD outcomes.

The present finding that only 30.0% of respondents demonstrated high exposure further highlights the need for strengthening the consistency and intensity of community-based NCD education programmes. While initial exposure provides an opportunity for improving awareness, repeated interactions, reinforcement of key messages, and community participation are important for translating knowledge into healthier practices. Similarly, Berkman et al., [5] and Glasgow et al., [4] highlighted the importance of understandable health information and sustained programme implementation in improving the reach and potential impact of health promotion interventions.

The sources of health education identified in the study further demonstrate the importance of using diverse communication channels. Community-based platforms, healthcare providers, and media channels contribute to expanding access to NCD information. This finding is

consistent with Kuyinu et al. [22], who reported that frequent use of broadcast media was associated with adequate health literacy among residents of Lagos State, Nigeria. However, while mass communication approaches can improve awareness, they may provide limited opportunities for interaction, clarification, and individualized guidance. Ozoemena et al. [10] and Jeet et al. [6] similarly emphasized the importance of participatory approaches in community health education, particularly those that allow discussion, feedback, and clarification of misconceptions.

The findings indicate that community-based NCD health education exists within the study area but requires improvement in terms of frequency, continuity, accessibility, and community engagement. Strengthening outreach activities, increasing regular community sessions, improving interaction between health educators and community members, and integrating multiple communication platforms may enhance the effectiveness of NCD health education programmes.

5. Conclusion

This study assessed the level of educational exposure to community-based health education on non-communicable diseases among residents of Rivers South-East Senatorial District, Nigeria. The findings revealed that a considerable proportion of respondents had high educational exposure, with 62.2% classified as having high exposure and 37.8% having low exposure. This indicates that community-based health education activities have reached a substantial proportion of the study population; however, the proportion of residents with low exposure highlights the need to strengthen the coverage and consistency of these programmes. The results of this research indicate that there is community-oriented health education regarding non-communicable diseases (NCDs) in the Rivers South-East Senatorial District; however, it is only moderately applied, unevenly accessible, and not thorough enough to ensure meaningful behavioural changes among residents. A significant portion of participants (62.2%) indicated previous engagement with NCD-related health education, yet the frequency, depth, and consistency of that exposure are lacking, with many experiencing irregular or infrequent sessions. This suggests that health education initiatives are not sustained effectively to promote long-lasting retention and behavioural adaptation.

The study also identified opportunities to improve participation in community-based health education through increased awareness, more frequent programmes, improved accessibility, convenient scheduling, and reduced transportation barriers. The findings highlight the importance of strengthening community-based health education through regular, accessible, and practical interventions that address the prevention and management of non-communicable diseases. Integrating health education with screening, referral, and follow-up services may help support healthier practices among residents. However, given the cross-sectional design of the study, the findings should be interpreted as associations rather than evidence of causal relationships. Further research may help establish how sustained exposure to community-based health education relates to long-term preventive and management behaviours.

Recommendations

1. Diverse channels such as radio, television, social media platforms, community gatherings, and direct outreach to households need to be fully utilized to enhance reach, especially among populations that are difficult to access.
2. The approach to health education should evolve from merely raising awareness to incorporating organized behavioral change tactics like lifestyle coaching, peer education, and community support networks focused on nutrition and physical exercise.
3. Health education initiatives should be planned at suitable times and situated closer to communities to mitigate obstacles related to travel distance, costs, and time limitations.

Article Information

Ethical Approval: Ethical approval was obtained from the Research Ethics Committee of the Faculty of Basic Medical Sciences, Rivers State University with reference number RSU/FBMS/REC/25/713.

Informed Consent: Written informed consent was obtained from all participants before their inclusion in the study.

Data Availability: The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Conflict of Interest: The authors declare no conflict of interest.

Funding: No external funding was received for this study.

Author Contributions: H.E.U. - Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Resources, Writing – Original Draft, Writing – Review & Editing, Project Administration; B.J.F. - Methodology, Data Curation, Project Administration; Q.D.A. - Investigation, Project Administration; A.I.W. - Formal Analysis, Writing – Review & Editing, Supervision, Project Administration; S.G.K. - Writing – Review & Editing, Supervision, Project Administration.

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AI Use Disclosure: Generative artificial intelligence, specifically ChatGPT by OpenAI, was used to assist with language refinement.

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