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Associations between socio-demographic factors, morbidity status, and healthcare-seeking patterns among residents in border communities of Ogun State, Nigeria

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Abstract

Ogun State, Nigeria, shares borders with the Republic of Benin. Socio-demographic characteristics of a given area may influence the health conditions of the residents. This study examines the influence of socio-demographic factors on morbidity and health-seeking patterns of people living in border communities of Ogun State, Nigeria. The study employed a quantitative research design, using structured questionnaires distributed to respondents from selected households in the border communities. Multivariable analyses were conducted on the data using SPSS version 20. Results show that socio-demographic factors such as age, location of residence, duration of residence, level of education, income level, and occupation of respondents are significantly associated with the health status of residents of border communities in Ogun State, Nigeria. The study recommends improving healthcare access and increasing investment in education and economic empowerment initiatives to support the health and well-being of residents in these border communities.

Keywords: Socio-demographic factors; Health; Residents in border communities; Ogun State; Nigeria

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1. Introduction

Ogun State in Nigeria shares borders with the Benin Republic. Given the disparities in the socio-demographic characteristics of people living in border regions in Nigeria, compared to other parts of the country, it is important to investigate the effects of socio-demographic factors on the health of residents of border communities in Nigeria. Cureño-Diaz *et al.* (2025) reported that socio-demographic factors such as gender, age, income, and level of education, among others, can influence the health conditions of individuals. Braveman & Gottlieb (2014) argued that the frequency and distribution of both infectious and chronic diseases are directly affected by the social determinants of health. Social determinants of health include the conditions or circumstances in which people are born, grow, work, and age. These circumstances are influenced by the historical and current distribution of money, power, and resources at the local, regional, and global levels. Moreover, these determinants depend directly on the policies implemented at these levels, and also on the health system, making them persistent,

systemic, and preventable (Hahn, 2021). In comparison to people in higher social classes, individuals in lower social strata are twice as likely to experience serious illnesses or die (Cureño-Diaz *et al*., 2025). These inequalities emanate from the socio-economic and socio-political situations in which people live, hence exposing them to peculiar risk circumstances (Braveman & Gottlieb, 2014).

Social disparities shape social determinants of health and impact health conditions, access to services, and trends in morbidity and mortality among people (Faria *et al*., 2023). Moreover, an individual's area of residence influences access to public goods. For instance, in rural areas, there may be greater difficulties in accessing healthcare, education, and public transport (The Lancet, 2024). Fantin *et al*. (2022) implied that communities with low economic status usually experience significant difficulties accessing basic health services. Individuals with greater economic resources generally experience more favorable health outcomes than those facing socio-economic disadvantage, resulting in inequalities in health (Armenti *et al*., 2023). The high rate of poverty in Nigeria requires an adequate response from government and policymakers to address the challenge (Aderounmu *et al*., 2021). In Africa, the availability of social protection contributes to the reduction in inequality and poverty (Osabohien *et al*., 2020).

Border communities in Ogun State, Nigeria, are mostly neglected and marginalized rural and remote areas, perhaps because they lie at the periphery of the country, far away from the center where economic and social infrastructural developments are concentrated. Hence, these border communities lack necessary economic empowerment and basic social amenities such as schools, adequate health services, and access to clean water, among others, which are vital for maintaining good health. This situation contributes to the socio-demographic composition and general well-being of residents of these border communities. This study examines the effects of socio-demographic factors on morbidity and healthcare-seeking behavior among residents of border communities in Ogun State, Nigeria, so as to ascertain the influence that these socio-demographic variables have on the health of people who live in these localities. Good health contributes to labor productivity, economic growth, and population well-being (Azuh *et al*., 2020).

Ghanem *et al*. (2023) investigated the association between socio-demographic factors and chronic disease risk in Hungarian adults aged 50 years and above. The authors revealed that females were less likely to develop chronic disease compared to males. In addition, individuals with elementary or high school education had higher odds of chronic disease, in contrast to those with university education. Moreover, the study indicated that employed individuals were less likely to report chronic diseases than pensioners. Similarly, individuals within the normal body mass index range were less likely to develop chronic disease, compared to people with a higher body mass index. Furthermore, people aged 50 to 59 years were less likely to have cardiovascular disease and diabetes, compared to those aged 70 years or above.

Moreover, Tarar *et al*. (2024) examined the influence of socio-demographic factors on parents' health-seeking behavior for sick children in Karachi. The authors found that most of the parents (82.7%) sought healthcare for their children from medical doctors, followed by spiritual healers (10.7%), traditional healers (5.6%), and homeopathic doctors (0.9%). Mou *et al*. (2022) examined the influence of socio-demographic factors on health-seeking behaviors among residents in Bangladesh during the first wave of COVID-19. The authors stated that greater use of healthcare services was reported among people of older age (greater than 50 years), higher education, higher income, and educated unemployed students. In contrast, slum residents and individuals engaged in business activities reported lower levels of health-seeking behavior. Additionally, females exhibited better health-seeking behaviors compared to males. Adongo *et al*. (2021) reiterated that there were significant relationships between socio-demographic factors such as marital status, sex, income level, and education, and the health-seeking behavior of patients with respect to the utilization of private and public health facilities.

Furthermore, Braimah *et al*. (2022) estimated demographic and socio-economic factors that drive dissatisfaction with the formal utilization of healthcare services among very low-income older adults in Ghana. The paper stated that females and people with high school education were less likely to show dissatisfaction with the utilization of formal healthcare services than males and people with no formal education. Also, the study showed that individuals who earned a monthly income of 201 Ghana cedi or more were more likely to report dissatisfaction with formal healthcare services compared to those who earned less than 100 Ghana cedi per month.

Ogbonna *et al*. (2024) explored socio-demographic risk factors for mental health disorders among school children in Umuahia, South East Nigeria. The authors stated that children within the age group of 10–13 years were 8 times more likely to have mental health disorders than children in the other age categories. Additionally, female children were three times more likely to develop mental health disorders compared to male

children. Additionally, children of lower socio-economic status were three times more likely to have mental health disorders than children from other socio-economic status categories. Moreover, children who reside with widowed caregivers were five times more likely to develop mental health disorders than children whose caregivers had other marital statuses. In addition, children living with non-biological caregivers were four times more likely to have mental health disorders, compared to those who live with biological caregivers.

According to Chukwu *et al.* (2026b), border residents with poorer access to potable water experience higher self-reported illness rates. Women engaged in informal cross-border trade along the Nigeria–Benin border face numerous problems, including gender-based violence and sexual exploitation from border control agents (George *et al.*, 2015), and this has resulted in a public health challenge (Amoo *et al.*, 2022). The health system in Nigeria is among the weakest in the world, and it is characterized by the concentration of nurses and doctors in a few tertiary health facilities in cities, whereas rural areas that make up more than 70% of the population suffer from a shortage of health personnel and insufficient healthcare facilities (Oladosun *et al.*, 2022).

2. Data and methods

2.1. Research design

This study was conducted in Ogun State, Nigeria. Ipokia, Yewa North, and Imeko-Afon Local Government Areas (LGAs), which are the only three LGAs in Ogun State, Nigeria, that share borders with the Benin Republic (as at the time of conducting this research), were selected as the study areas. The study was conducted using structured questionnaires. These questionnaires were administered to selected households in each of the border communities visited. In every household visited, the interviewer interviewed any member of the household who was 18 years or older (legal consent age in Nigeria). The sample size was calculated using the Taro Yamane formula (Yamane, 1967) and was determined to be 1,317 respondents. The sample comprised 474 respondents from Ipokia LGA, 580 from Yewa North LGA, and 263 from Imeko-Afon LGA. The data collection for the study was performed by the researcher and eight research assistants. In recruiting the research assistants, the researcher ensured that the research assistants were fluent in English and the local languages spoken in their assigned study areas. The research assistants were specifically trained using the questionnaire for the study before field data collection began. The principal researcher closely monitored and supervised the data collection process in order to minimize interviewer bias or influence. The study was carried out from September 16, 2024, to November 22, 2024.

2.2. Measures

This research employed two categories of variables throughout the study. These include the independent variables and the dependent variables. The socio-demographic characteristics of the respondents were used as independent variables. The dependent variables were morbidity status and healthcare-seeking patterns. Morbidity status of the respondents was assessed based on (i) whether respondents had experienced illness in the 12 months preceding the study and (ii) the frequency of illness, while healthcare-seeking patterns were assessed based on (iii) whether respondents had sought hospital treatment, (iv) whether respondents had used traditional medicine, and (v) whether respondents had practiced self-medication. Of the 1,317 respondents, 855 reported experiencing illness during the 12 months preceding the study.

The respondents' socio-demographic characteristics included age, sex, marital status (single, married, etc.), number of children, location (Ipokia LGA, Yewa North LGA, Imeko-Afon LGA), duration of residence (number of years living in the community), educational attainment (no formal education, primary education, secondary education, etc.), monthly income (measured in Nigerian naira: less than 30,000; 30,000–69,999.99; etc.), occupation (unemployed, self-employed, etc.) and religion (Christianity, Islam, traditional religions, or other). The dependent variables comprised (i) illness in the preceding 12 months (whether respondents had experienced illness during the 12 months preceding the study; yes or no); (ii) frequency of illness (number of times respondents had experienced illness during the preceding 12 months; once, twice, three times, etc.), which was subsequently dichotomized as 0 = one or two times and 1 = three or more times before the main analyses; (iii) hospital treatment (whether respondents sought hospital treatment; yes or no); (iv) use of traditional medicine (whether respondents had used traditional medicine; yes or no; and (v) self-medication (whether respondents had practiced self-medication; yes or no).

2.3. Data analysis

The analysis focused on data collected from respondents in the three stated LGAs. Using SPSS version 20 (IBM Corp., United States), the study performed multivariable analyses to examine the degree of relationship between the independent and dependent variables. The results were expressed as odds ratios (ORs) with corresponding confidence intervals (CIs). Statistical significance was

set at $p \leq 0.05$. Multicollinearity among the independent variables was assessed using the variance inflation factor, with all values below 3, indicating that multicollinearity was not a major concern in this study (Hair *et al*., 2010).

2.4. Ethical considerations

Primary data were collected through interviewer-administered structured questionnaires; hence, there was a one-on-one interaction with the respondents. The researcher implemented measures to protect participants' privacy and confidentiality. To achieve this, the researcher obtained ethical approval for this study from the Covenant Health Research Ethics Committee (CHREC), with the HREC Protocol Assigned Number CHREC/420/2023. The study adhered strictly to the rules of ethics for investigation of human subjects as laid down by CHREC; participants were duly informed of the purpose and nature of the study, and that participation was entirely voluntary, as each participant could withdraw at any time during the interview. The researcher also assured the respondents of the anonymity of the information they provided. Everyone who participated in the survey provided written informed consent before the process proceeded.

3. Results

3.1. Socio-demographic profile of the respondents

Table 1 presents the socio-demographic profile of the respondents.

Table 1. Respondents' socio-demographic characteristics (*N* = 1,317)

Variables	*n*	%
Age (years)		
18–27	184	14.0
28–37	328	24.9
38–47	413	31.3
48–57	247	18.8
58–67	108	8.2
68–77	33	2.5
78 and above	4	0.3
Sex		
Female	717	54.4
Male	600	45.6
Marital status		
Single	184	14.0
Married	977	74.2
Divorced/separated	70	5.3
Widowed	86	6.5
Number of children		
1	117	8.9
2	359	27.3
3	342	26.0
4	215	16.3
5	73	5.5
Other	211	16.0
Location of respondent (Local Government Area)		
Ipokia	474	36.0
Yewa North	580	44.0
Imeko-Afon	263	20.0
Duration of residence (years)		
1–10	102	7.7
11–20	122	9.3
21–30	308	23.4
31–40	338	25.7
41–50	255	19.4
51–60	150	11.4
61 and above	42	3.2
Level of education		
No formal education	127	9.6
Primary education	372	28.2
Secondary education	676	51.3
Post-secondary education	39	3.0
Tertiary education	103	7.8
Income level (Nigerian naira/month)		
Less than 30,000	647	49.1
30,000–69,999	440	33.4
70,000–99,999	169	12.8
100,000–129,999	60	4.6
Other	1	0.1
Occupation		
Unemployed	75	5.7
Self-employed	278	21.1
Civil servant	36	2.7
Farming	145	11.0
Trading	452	34.3

(*Cont'd*...)

Table 1. (***Continued***)

Variables	*n*	%
Artisan	267	20.3
Other	64	4.9
Religion		
Christianity	742	56.3
Islam	505	38.4
Traditional religions	69	5.2
Other	1	0.1

Table 1 summarizes the sociodemographic characteristics of the 1,317 respondents. The largest age group was 38–47 years (31.3%), and 54.4% of respondents were female. Most respondents were married (74.2%) and had completed secondary education (51.3%). Yewa North accounted for the largest proportion of respondents (44.0%), followed by Ipokia (36.0%) and Imeko-Afon (20.0%). Nearly half of the respondents (49.1%) reported monthly incomes below 30,000 naira, and trading was the most common occupation (34.3%).

3.2. Binary logistic regression showing the effects of socio-demographic factors on morbidity status and healthcare-seeking behavior

Table 2 presents the relationships between respondents' socio-demographic factors, morbidity status, and healthcare-seeking patterns among residents in these border communities based on logistic regression models.

Model 1 shows the odds of respondents reporting any illness in the last 12 months before the study. The results showed that the odds of reporting illness in the last 12 months were lower for those aged 48–57 years (OR = 0.381; CI = 0.218, 0.668) and 58 years and above (OR = 0.365; CI = 0.200, 0.666) compared to the reference age group (18–27 years). This implies that respondents aged 18–27 years are more likely to feel ill in these border areas. Additionally, the odds that the respondents reported being ill in the last 12 months were lower for residents of Yewa North LGA (OR = 0.480; CI = 0.350, 0.657) and Imeko-Afon LGA (OR = 0.589; CI = 0.408, 0.849), compared to the reference location (Ipokia LGA). These statistics indicate that people who live in Ipokia LGA are more prone to illnesses than in the other two LGAs. Idi-iroko community, in Ipokia LGA, is where the official border gateway between Nigeria and the Benin Republic (through Ogun State) is located. The higher rate of cross-border activities such as smuggling of illegal goods, stringent border security measures, and infiltration of unchecked migrants could likely contribute to the greater prevalence of illnesses in this LGA.

In addition, the odds that the respondents had illness in the last 12 months were higher for those who have lived in the border communities for 11–30 years (OR = 2.258; CI = 1.350, 3.778), and 31 years or more (OR = 2.323; CI = 1.329, 4.060), compared to the reference category (10 years or less). This indicates that people who had resided in these communities for more than 10 years were more susceptible to illnesses compared to those who had lived for 10 years or less. The reason for this result may be that residents who have lived in these border communities for longer periods have become entrenched in socio-economic patterns associated with poor health outcomes. Hence, this group of people might have been neglected for a longer time and lacked adequate access to basic amenities such as clean drinking water and adequate healthcare access, necessary for healthy living. Also, due to their longer existence in these border areas, they may be more involved in illegal cross-border socio-economic activities such as smuggling of goods, with its attendant negative health consequences. Moreover, the odds that the respondents felt ill in the last 12 months were lower for the residents who were tertiary educated (OR = 0.586; CI = 0.346, 0.993), compared to the reference category (no formal education/primary education). These statistics imply that education raises people's awareness to make better health choices, which in turn influences their health outcomes positively.

Model 2 shows the odds of frequency of illness for respondents who stated that they had been ill within the last 12 months. The results indicate that the odds of frequent illness were higher for respondents who live in Yewa North LGA (OR = 2.030; CI = 1.233, 3.345), and lower for people who reside in Imeko-Afon LGA (OR = 0.524; CI = 0.331, 0.831), compared to the reference category (Ipokia LGA). This could be because of the considerably larger population size of Yewa North LGA and the apparent lack of necessary health facilities and affordable healthcare services to meet residents' healthcare needs, compared to the lower population sizes of Ipokia LGA and Imeko-Afon LGA. Also, the odds of becoming sick on a regular basis were lower for respondents who earn 30,000 naira to 69,999 naira per month (OR = 0.338; CI = 0.206, 0.553), and 70,000 naira or more per month (OR = 0.597; CI = 0.374, 0.952), compared to the reference category (less than 30,000 naira per month). This implies that the more income the residents earn, the less prone they are to becoming sick recurrently; meaning that earning higher income enables the residents to properly take care of their health. This calls for adequate policy interventions to boost the income opportunities of these residents, which will inadvertently enhance their health outcomes.

Model 3 presents the odds of seeking care through

Table 2. Binary logistic regression on morbidity status and healthcare-seeking behavior by socio-demographic factors

Socio-demographic factors	Model 1		Model 2		Model 3		Model 4		Model 5	
	Illness in the last 12 months		Frequency of illness		Care through hospital treatment		Care through traditional medicine		Care through self-medication	
	OR (95% CI)	Sig.	OR (95% CI)	Sig.	OR (95% CI)	Sig.	OR (95% CI)	Sig.	OR (95% CI)	Sig.
Age (years)										
18–27	1.000		1.000		1.000		1.000		1.000	
28–37	0.724 (0.459, 1.142)	0.165	1.571 (0.703, 3.509)	0.270	0.793 (0.400, 1.573)	0.507	4.245 (1.811, 9.950)	0.001	1.343 (0.661, 2.728)	0.414
38–47	0.769 (0.464, 1.273)	0.307	1.294 (0.673, 2.490)	0.439	0.961 (0.555, 1.665)	0.888	1.606 (0.830, 3.108)	0.160	0.815 (0.461, 1.443)	0.483
48–57	0.381 (0.218, 0.668)	0.001	1.343 (0.750, 2.403)	0.321	0.970 (0.592, 1.592)	0.905	1.405 (0.776, 2.543)	0.262	0.922 (0.552, 1.538)	0.755
58 and above	0.365 (0.200, 0.666)	0.001	0.961 (0.525, 1.762)	0.899	1.051 (0.638, 1.730)	0.845	1.639 (0.875, 3.071)	0.123	0.858 (0.511, 1.441)	0.563
Sex										
Female	1.000		1.000		1.000		1.000		1.000	
Male	1.236 (0.957, 1.597)	0.104	1.198 (0.828, 1.734)	0.338	1.221 (0.901, 1.655)	0.198	1.068 (0.729, 1.564)	0.735	0.834 (0.605, 1.148)	0.264
Marital Status										
Else	1.00		1.000		1.000		1.000		1.000	
Married	1.178 (0.828, 1.675)	0.362	1.555 (0.998, 2.422)	0.051	0.606 (0.415, 0.884)	0.009	1.685 (1.039, 2.732)	0.034	1.161 (0.781, 1.724)	0.460
Number of children										
1 or 2	1.000		1.000		1.000		1.000		1.000	
3–4	1.101 (0.815, 1.487)	0.532	1.018 (0.599, 1.732)	0.946	0.926 (0.596, 1.438)	0.732	1.353 (0.786, 2.328)	0.276	1.232 (0.779, 1.949)	0.372
Other	1.069 (0.727, 1.571)	0.736	1.130 (0.669, 1.910)	0.648	0.857 (0.555, 1.324)	0.488	1.136 (0.669, 1.929)	0.638	1.539 (0.976, 2.428)	0.063
Location of respondent (Local Government Area)										
Ipokia	1.000		1.000		1.000		1.000		1.000	
Yewa North	0.480 (0.350, 0.657)	0.001	2.030(1.233, 3.345)	0.005	0.629 (0.399, 0.991)	0.046	0.951 (0.586, 1.544)	0.839	1.224 (0.768, 1.950)	0.372
Imeko-Afon	0.589 (0.408, 0.849)	0.005	0.524 (0.331, 0.831)	0.006	0.752 (0.512, 1.105)	0.146	5.120 (3.137, 8.356)	< 0.001	3.581 (2.406, 5.331)	0.001
Duration of residence (years)										
10 or less	1.000		1.000		1.000		1.000		1.000	
11–30	2.258 (1.350, 3.778)	0.002	0.431 (0.207, 0.899)	0.025	1.304 (0.705, 2.412)	0.398	0.155 (0.078, 0.310)	0.001	0.900 (0.478, 1.695)	0.745
31 or more	2.323 (1.329, 4.060)	0.003	0.590 (0.364, 0.958)	0.033	1.503 (1.005, 2.247)	0.047	0.471 (0.295, 0.753)	0.002	0.898 (0.592, 1.364)	0.615

(*Cont'd...*)

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Table 2. (*Continued*)

Socio-demographic factors	Model 1		Model 2		Model 3		Model 4		Model 5	
	Illness in the last 12 months		Frequency of illness		Care through hospital treatment		Care through traditional medicine		Care through self-medication	
	OR (95% CI)	Sig.	OR (95% CI)	Sig.	OR (95% CI)	Sig.	OR (95% CI)	Sig.	OR (95% CI)	Sig.
Level of Education										
Tertiary education	0.586 (0.346, 0.993)	0.047	1.648 (0.870, 3.122)	0.125	0.844 (0.496, 1.438)	0.533	1.337 (0.719, 2.486)	0.359	0.830 (0.479, 1.438)	0.506
Income level (Nigerian naira/ month)										
Less than 30,000	1.000		1.00		1.000		1.000		1.000	
30,000–69,999	1.211 (0.901, 1.628)	0.205	0.338 (0.206, 0.553)	0.001	1.270 (0.829, 1.947)	0.272	1.306 (0.778, 2.192)	0.313	1.375 (0.881, 2.145)	0.161
70,000 or more	1.152 (0.799, 1.661)	0.448	0.597 (0.374, 0.952)	0.030	0.868 (0.567, 1.331)	0.517	1.532 (0.921, 2.549)	0.101	0.932 (0.599, 1.450)	0.754
Occupation										
Unemployed	1.000		1.000		1.000		1.000		1.000	
Self-employed	1.428 (0.778, 2.620)	0.250	1.673 (0.657, 4.259)	0.281	0.661 (0.288, 1.520)	0.330	1.103 (0.400, 3.040)	0.849	0.775 (0.328, 1.835)	0.563
Farming	1.277 (0.664, 2.456)	0.464	1.231 (0.557, 2.718)	0.607	1.317 (0.651, 2.662)	0.443	0.778 (0.334, 1.813)	0.561	0.436 (0.209, 0.910)	0.027
Trading	0.885 (0.491, 1.597)	0.685	0.80 0(0.326, 1.963)	0.626	1.080 (0.515, 2.268)	0.838	1.149 (0.442, 2.988)	0.776	0.722 (0.331, 1.573)	0.412
Artisan	1.144 (0.628, 2.084)	0.661	0.629 (0.293, 1.352)	0.235	0.809 (0.422, 1.549)	0.522	1.337 (0.586, 3.049)	0.490	0.789 (0.399, 1.563)	0.497
Civil servant/ other	2.268 (1.158, 4.445)	0.017	0.530 (0.231, 1.221)	0.136	0.577 (0.288, 1.156)	0.121	1.325 (0.548, 3.206)	0.532	1.278 (0.612, 2.668)	0.513
Religion										
Traditional religions/other	1.000		1.000		1.000		1.000		1.000	
Islam	1.107(0.625, 1.962)	0.727	0.719 (0.337, 1.535)	0.394	0.557 (0.284, 1.091)	0.088	0.755 (0.351, 1.628)	0.474	0.937 (0.473, 1.856)	0.851
Christianity	0.933 (0.529, 1.643)	0.809	0.769 (0.533, 1.111)	0.162	0.903 (0.673, 1.212)	0.498	0.818 (0.560, 1.196)	0.301	0.801 (0.587, 1.092)	0.160

Notes: Statistical significance was set at $p \leq 0.05$. Model 1: Dependent variable, illness in the preceding 12 months ($N = 1,317$). Model 2: Dependent variable, frequency of illness in the preceding 12 months ($N = 855$). Model 3: Dependent variable, hospital treatment (N = 855). Model 4: Dependent variable, use of traditional medicine (N = 855). Model 5: Dependent variable, self-medication (N = 855).

Abbreviations: CI: Confidence interval; OR: Odds ratio; Sig.: Significance.

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hospital treatment for respondents who became ill within the last 12 months. The odds of getting care through hospital treatment were lower for residents who were married (OR = 0.606; CI = 0.415, 0.884), compared to the reference category (else). It is possible that the high cost of healthcare services for the residents in these communities may dissuade married people (who may be struggling with other family expenses) from seeking care in the hospitals. Similarly, the odds of seeking care through hospital treatment were lower for respondents who live in Yewa North LGA (OR = 0.629; CI = 0.399, 0.991), compared to the reference category (Ipokia LGA). The larger population of Yewa North LGA and apparent lack of enough health facilities to adequately cater to the people's healthcare needs could be the reason for this result. Additionally, the odds of seeking care through hospital treatment were higher for residents who had lived in these communities for 31 years or longer (OR = 1.503; CI = 1.005, 2.247), compared to the reference category (10 or less years). It is possible that residents who have lived in these communities for longer have better-established access to hospital healthcare, especially across the border, than more recent residents.

Moreover, Model 4 indicates the odds of seeking care through traditional medicine for respondents who reported being sick within the last 12 months. The odds of seeking care through traditional medicine were higher for respondents aged 28–37 years (OR = 4.245; CI = 1.811, 9.950), compared to the reference category (18–27 years). Residents aged 28–37 years may likely have more financial responsibilities to attend to, hence prompting them to seek care through traditional medicine, which may be cheaper (so as to meet other pressing needs), compared to people aged 18–27 years, who have fewer financial responsibilities. Similarly, the odds of procuring care through traditional medicine were higher for respondents who were married (OR = 1.685; CI = 1.039, 2.732), compared to the reference category (else). The potentially high financial burden of hospital care on residents with low income could prompt married individuals to seek care through traditional medicine, which may be more affordable, to meet other family expenses. Additionally, the odds of seeking care through traditional medicine were higher for respondents who live in Imeko-Afon LGA (OR = 5.120; CI = 3.137, 8.356), compared to the reference category (Ipokia LGA). It is likely that residents of Imeko-Afon LGA do not have access to hospital healthcare services as much as people in Ipokia LGA, influencing them to seek care through other means such as traditional medicine. In addition, the odds of seeking care through traditional medicine were lower for residents who have lived in these communities for 11–30 years (OR = 0.155; CI = 0.078, 0.310), and 31 or more years (OR = 0.471; CI = 0.295, 0.753), compared to the reference category (10 or less years). As indicated previously, there is a possibility that long-term residents have more established access to hospital healthcare, compared to new entrants.

Furthermore, Model 5 shows the odds of getting care through self-medication for respondents who stated that they were sick during the last 12 months before the study. The odds of practicing self-medication were higher for residents who live in Imeko-Afon LGA (OR = 3.581; CI = 2.406, 5.331), compared to the reference category (Ipokia LGA). Residents of Imeko-Afon LGA are apparently more likely to seek care through self-medication, perhaps due to lack of access to hospital health services, as compared to Ipokia LGA. Hence, the government should provide more healthcare facilities and personnel in these border areas, so as to enhance their access to health services, which will also improve well-being in these localities. Additionally, the odds of self-medicating were lower for respondents who were farmers (OR = 0.436; CI = 0.209, 0.910), compared to the reference category (unemployed). People who are farmers are likely to earn more income and be able to afford the cost of healthcare services in hospitals than residents who are unemployed. Hence, farmers may be more inclined to seek care from health professionals in hospitals, instead of self-medicating, compared to those who are unemployed.

4. Discussion

The findings of this study reveal nuanced relationships that exist between respondents' socio-demographic factors, morbidity status, and health-seeking patterns within these border communities. The results support and expand upon existing literature, while offering salient contributions on the nexus between socio-demographic factors, morbidity status, and health-seeking patterns among individuals within a locality. Results in Model 1 show that respondents aged 18 to 27 years are more likely to feel sick in these communities. Younger people who are mostly active may report more transient illnesses (such as headaches or bodily pain) which may easily be captured by a simple "sick in the last 12 months" binary measure, compared to older individuals. This supports the risk exposure theory, which pinpoints specific risk factors that increase or decrease the likelihood of a health incident. The theory provides necessary understanding of how varied levels of exposure to a behavior can escalate or lessen the likelihood of contracting certain diseases, and enables public health officials to identify the exposures that are most harmful and to focus interventions and resources on particular environmental factors or populations to avert diseases (Pascarella *et al.*, 2021). Pagan (2024) argued that young people aged 18 to 26 are still undergoing emotional, social, and cognitive development, making it a susceptible time

for health challenges, as they encounter new stressors. However, the apparently better health status of older adults in vulnerable rural communities may reflect survivorship bias, whereby individuals who survive to older age may be healthier than those who do not, as well as the normalization or underreporting of chronic symptoms among older adults. Hence, since this study relies on unvalidated self-reported health status, the perception of being ill is likely to vary with age and may require longitudinal studies or medical records to confirm this trend.

Furthermore, the statistics in Model 1 indicate that residents who are tertiary educated are less likely to feel sick in these communities. Education increases people's knowledge of better health-seeking behavior and choices. This is in line with the ecological model of health behavior, which argues that behavior is influenced by multiple sources such as institutional, community, interpersonal, and individual factors. Knowledge-based institutions such as schools can help disseminate information through interpersonal interactions, among others, on better health choices and health-seeking options in these localities. Adongo *et al.* (2021) reiterated that there was a significant association between patients' level of education and their health-seeking behavior with respect to the utilization of private and public health facilities. Hence, it is imperative that the government should increase investments in education in these localities by building and equipping more schools and subsidizing fee payments through scholarships and/or free education, in order to encourage the residents to acquire necessary knowledge that will inevitably improve their health behavior.

Similarly, results in Model 2 show that earning higher income reduces the susceptibility of these residents to recurrent illnesses. This implies that the more income the residents earn, the more they have the financial capacity to properly take care of their health. This empirical evidence validates the proposition of the ecological models of health behavior, which emphasize that various layers of behavior can be systematically tackled at each level to create comprehensive health system interventions. The model can assist in providing a broad view of the factors that influence particular health choices, as well as the social determinants of health. Findings by Armenti *et al.* (2023), who stated that individuals with greater economic power and resources are more likely to be healthier than people in deprived positions, support this result. Hence, it is advisable that the government provide vocational training centers, microcredit programs, and easy access to cross-border trade, among others, in order to boost the income opportunities of these residents, which may contribute to improved health outcomes.

In the same vein, results in Model 3 signify that respondents who are married are less likely to seek care in hospitals. This is supported by Adongo *et al.* (2021), who reiterated that the marital status of individuals may influence their health-seeking behavior with respect to the utilization of private and public health facilities. The result aligns with the health belief model, which focuses on the beliefs of individuals concerning health choices, which inform their health-related behaviors. The model defines the key elements that affect health behaviors as perceived susceptibility to illness or disease, perceived severity, possible positive benefits of action, likely barriers to action, exposure to factors that motivate action, and assurance in ability to succeed (Alyafei & Easton-Carr, 2024). Practically, individuals evaluate the advantages of altering their behavior to make healthy choices and decide to act based on their assessment (Alyafei & Easton-Carr, 2024). Results in Table 1 show that the majority of the respondents are low-income earners. It is possible that the relatively high cost of hospital healthcare services in these communities may influence residents (such as married people, who may likely have more financial responsibilities) to seek care through other potentially less expensive alternatives, instead of hospital care. This may be because they also want to meet other pressing family needs. According to Fantin *et al.* (2022), individuals with low economic status usually experience significant difficulties accessing basic healthcare services. Additionally, Chukwu *et al.* (2026a) implied that border residents with low economic capacity usually experience limited access to health services. The government should reduce or subsidize the cost of hospital healthcare services in these border areas, in order to encourage more residents to seek proper medical care from trained professionals in hospitals, thereby influencing the health outcomes of these communities positively. It is also likely that the inadequacy of health services in these communities, perhaps concerning reproductive health matters, may discourage married residents from visiting the hospitals for care. This is supported by Oladosun *et al.* (2022), who emphasized that rural communities in Nigeria lack adequate health facilities and personnel.

In addition, results in Model 4 and Model 5 show that respondents who live in Imeko-Afon are more likely to use traditional medicine and self-medication, respectively. This may be due to a lack of access to adequate health services, as a result of the scarcity of health facilities and inadequate health personnel in these localities, which aligns with the risk exposure theory that reiterates the high prevalence of social or environmental health risks in predominantly minority and marginalized communities. This situation might have influenced the residents for a long time, making them more prone to seeking care

through other alternatives such as traditional medicine and/or self-medication. The location of people's area of residence may influence their access to public goods. For example, in rural localities, there may be greater difficulties in accessing healthcare services (The Lancet, 2024). This calls for the provision of more healthcare facilities such as primary healthcare centers and general hospitals in Imeko-Afon LGA, and public awareness initiatives encouraging residents to use these facilities, which will help to improve their health conditions.

Based on these findings, the study proposes four key recommendations. First, the government should boost the economic status of these border areas by expanding economic empowerment programs and local employment opportunities to help residents better cover their health-related needs. Second, targeted investments in local education, including new school construction, free basic education, and resident-focused scholarships, should be scaled up to raise local educational levels, which will in turn drive better population health outcomes. Third, additional healthcare facilities and qualified personnel should be deployed to these border communities to improve residents' access to essential health services and improve residents' well-being. Fourth, the government should reduce or subsidize formal hospital service fees in these areas to encourage more residents to seek timely, professional medical care and deliver positive, sustained improvements to community health outcomes.

Several important limitations of this study should be explicitly acknowledged. First, all sampled border settlements in Ogun State are predominantly rural, and the vast majority of local residents do not possess sufficient English fluency to complete a structured survey in the official national language and could only provide responses in the region's indigenous local dialects. While the research team implemented targeted mitigation measures—including the pre-study recruitment and rigorous training of bilingual research assistants with native or near-native proficiency in both English and all relevant local dialects—this language context still introduced unmeasurable, minor risks of subtle interpretive bias during field data collection. Second, the geographically dispersed sampling frame, which covered three distinct LGAs across Ogun State, Nigeria, substantially elevated field transportation costs and overall logistical expenditure for the study, a constraint that slightly limited the maximum achievable sample size. Third, this cross-sectional study is inherently vulnerable to recall bias: a subset of respondents may not be able to accurately report the precise timing of their most recent illness event, particularly for episodes that occurred a relatively long time before the interview. Finally, this study relied entirely on self-reported health status data and did not incorporate parallel clinical assessment procedures to independently corroborate the veracity of respondents' self-reported health outcomes.

5. Conclusion

The empirical analysis confirms that socio-demographic characteristics are robustly associated with the multidimensional health outcomes and healthcare-seeking trajectories of populations residing in border communities of Ogun State, Nigeria. The study further elucidates statistically salient interplays across all examined variables, laying bare the structural vulnerabilities embedded within these border settlement contexts and the imperative to redress these systemic weaknesses. As such, appropriately calibrated, evidence-based interventions targeting these empirically identified domains hold considerable potential to yield measurable, sustained improvements in the health and well-being of border community residents. It is therefore anticipated that governmental bodies and allied policy stakeholders will draw rigorously on the findings of this study to advance equitable health outcomes for marginalized populations in border communities across Ogun State and the broader Nigerian landscape. This work carries distinct timeliness and policy relevance: it not only generates actionable insights to advance health promotion in Nigerian border settings, but also provides empirical support to accelerate the nation's progress toward fulfilling the health-related targets enshrined in Sustainable Development Goal 3.

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Conflict of interest

The authors declare that there is no conflict of interest.

Author contributions

Conceptualization: All authors
Formal analysis: Henry Osita Chukwu
Investigation: Henry Osita Chukwu
Methodology: All authors

Writing-original draft: Henry Osita Chukwu
Writing-review & editing: Henry Osita Chukwu

Ethics approval and consent to participate

Ethical approval was obtained from the Covenant Health Research Ethics Committee (CHREC), with the HREC Protocol Assigned Number CHREC/420/2023. The study adhered strictly to the rules of ethics for investigation of human subjects as laid down by CHREC; participants were duly informed of the purpose and nature of the study, and that participation was entirely voluntary, as each participant could withdraw at any stage in the discussion. The researcher also assured the respondents of the anonymity of the information they provided. Participants provided written informed consent to participate in the study before the process proceeded.

Consent for publication

Participants provided written informed consent for publication of the analyzed data in the study before the process proceeded.

Availability of data

The data used for this study are available from the corresponding author upon request.

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