KADUNA JOURNAL OF GEOGRAPHY
2026, VOL. 8, No. 1, 1-10
https://doi.org/10.47514/kjg.2026.08.01.001

Research Article

Geographic Access Barriers and Student Healthcare Needs at Kaduna State College of Education, Gidan-Waya, Nigeria

Peter Danjuma Averik [a], Iliya Amos [b], Diana Virginia Martins [c], Rose Uwanassara Danjuma [d], Joel Monday Bature [e], Aaron Yashim Tabat [f], Albert Madaki [g]

[a] Department of Geography and Environmental Management, University of Port Harcourt, Rivers State, Nigeria. [b] Regional Training Institute on Distance Open Learning (RETRIDOL), National Open University of Nigeria, Jabi, Abuja. [c] Department of Geography, Ahmadu Bello University, Zaria, Kaduna State, Nigeria. [d] Department of Mathematical Sciences, Kaduna State University, Kaduna, Nigeria. [e] Department of Political Science, Kaduna State University, Kaduna, Nigeria. [f] Department of Public Administration, Ahmadu Bello University, Zaria, Kaduna State, Nigeria. [g] Department of Geography, Federal University Dutsin-Ma, Katsina State, Nigeria.

ABSTRACT

Geographic accessibility is a fundamental constraint to healthcare delivery in rural-tertiary interfaces. Framed by the Okanagan Charter's call to embed health into campus operations, this study evaluates student healthcare needs and spatial barriers at the Kaduna State College of Education (KSCOE), Gidan-Waya. Using a descriptive survey of 357 students via multi-stage sampling, findings reveal a profound "utilization-need gap": while 73% of students report unaddressed conditions, primarily surgical/gastrointestinal issues (52%, including appendicitis, hernias, and ulcers), malaria (29%), and visual impairments (25%), clinic utilization stands at a marginal 9%. Spatial analysis confirms a "spatial trap"; students face an 18km isolation from secondary healthcare, while a population surge in Gidan-Waya Ward (from 35,200 in 2006 to over 61,000 in 2024) "crowds out" student access to limited primary resources. The study concludes that the current "Sick Bay" model is spatially exclusionary and clinically obsolete, rendering students "structurally invisible." To align with the Healthy Universities framework, the study recommends an urgent upgrade of the facility to secondary-level status, institutionalized semester-based outreach, and formal "town-gown" partnerships to mitigate these inequities.

ARTICLE HISTORY
Submitted 01 January 2026
Accepted 13 February 2026
Published 22 February 2026

GUEST EDITOR
A. M. Ahmed

KEYWORDS
Distance–Decay; Okanagan Charter; Medical Outreach; Public Tertiary Institutions; Rural–Urban Interface; Spatial Analysis

1 Introduction

At the global level, the Healthy Universities framework pioneered by Tsouros et al. (1998) and reaffirmed by the International Network of Health Promoting Universities & Colleges (INHPUC) (2015), posits that the physical and institutional architecture of tertiary campuses constitutes a critical determinant of student well-being. While developed nations increasingly operationalize socio-spatial proximity metrics within urban and campus planning to promote health equity (Alkhawaldeh, 2017; Alvarez-Hernandez et al., 2024; Osborn et al., 2024), measurable accessibility inequities persist across contexts. In many Global South settings, high-level health promotion policies have not translated into integrated health-campus layouts, thereby producing structural spatial accessibility gaps. For tertiary students in these regions, geographic barriers remain a primary impediment to healthcare delivery, as underserved campus populations navigate environments where physical distance and structural limitations directly compromise well-being and equitable access to care (Dumedah et al., 2023; Hiliya & Yahaya, 2025; Wulifan et al., 2022).

In Sub-Saharan Africa, institutional growth has historically prioritized academic infrastructure over healthcare logistics, resulting in "spatial exclusion" for many learners (Wao et al., 2025). Within Nigeria, this disparity is acute in Gidan-Waya Ward, where the population surged from 35,200 in 2006 (NPC, 2009) to an estimated 61,000 by 2024. This growth has oversaturated the town's only Public Primary Healthcare Centre (PHC), effectively limiting student access to community care. Consequently, this redirected demand exerts unsustainable pressure on the Kaduna State College of Education (KSCOE) Sick Bay. This "spatial competition" for limited clinical resources leaves students in a state of clinical isolation, as both the public and campus facilities are now operationally misaligned with the current regional population density.

At the local scale, the friction of distance to Public Primary Healthcare Centres (PPHCs) manifests as a pronounced distance-decay effect, significantly marginalizing health-seeking behavior among the student population. This spatial barrier is underscored by the fact that several Local Government Areas (LGAs) in Kaduna State have catchment areas exceeding 400 km^2, a metric that quantifies the profound isolation of rural-tertiary interfaces such as Gidan-Waya and the attenuated reach of existing infrastructure (Averik et al., 2024).

However, recent evidence suggests that geographic proximity is a necessary but insufficient condition for accessibility. Averik et al. (2025) identify a "proximity–poverty paradox" within the state, where even when ward-level facility coverage is achieved, the economic

Corresponding Author: Averik, P. D. danjumark@gmail.com Department of Geography and Environmental Mgmt. University of Port Harcourt, Nigeria.

distance, driven by transport costs and low disposable income, remains the primary determinant of utilization. For the KSCOE students, the 18km isolation from Gidan-Waya to the nearest secondary medical facility in Kafanchan, the LGA headquarters, is more than a physical gap; it is a compounding economic barrier. This distance effectively traps students in a cycle of unaddressed medical needs, as the dual burdens of transportation costs and time loss widen the divide between theoretical proximity and actual care.

Consequently, the health-seeking behavior of students at KSCOE is currently constrained by a profound institutional-spatial mismatch. Despite the presence of the campus Sick Bay, its primary-level scope is clinically misaligned with the diverse healthcare needs of a modern student body. This misalignment is exacerbated by a Proximity Paradox: while students are physically situated near high-capacity facilities such as the Arthur and Esther Bradley Memorial Anglican Hospital and the Kateri Clinic network, they remain "medically invisible" due to a lack of formal administrative linkages and referral pathways. This isolation is further intensified by the geographic disconnect from secondary care centers in the LGA headquarters, which acts as a compounding economic barrier. Moreover, a rigid Academic–Temporal Barrier persists, where inflexible lecture schedules effectively "time out" students from seeking care during standard clinical operating hours. Caught in this spatial trap, students are forced into unregulated self-medication and reliance on Patent Medicine Vendors (PMVs). Without bridging this divide through an upgrade to secondary status and integrated outreach, student health and academic productivity will remain undermined by a system that is physically proximate but functionally unreachable.

1.1 Theoretical Foundation

Empirical evidence consistently situates tertiary students in low- and middle-income countries (LMICs) as a structurally underserved demographic within national health systems. While generally perceived as a healthy cohort, students bear a significant burden of unmet physical and mental health needs, compounded by persistently low utilization of formal clinical services (Pedrelli et al., 2015; Pliannuom et al., 2021; Volpe et al., 2019). This "utilization–need gap" is increasingly viewed as a failure of spatial and institutional integration. In Nigeria, undergraduates frequently defer treatment due to a triad of prohibitive costs, limited clinical scope, and inconvenient service hours (Orok et al., 2024), a pattern mirrored in South Africa, where institutional inaccessibility and perceived poor quality drive a pronounced "utilization deficit" (Musakwa et al., 2021). Consequently, students often bypass formal systems in favor of informal care pathways and delayed care-seeking behavior, even when facilities are nominally available.

This utilization gap is heavily mediated by financial protection mechanisms and the "friction of distance." In Nigeria, low insurance awareness and the predominance of out-of-pocket expenditure effectively monetize access, excluding economically vulnerable students and creating a "poverty paradox" where services exist but remain financially unreachable (Adewole et al., 2017; Adebola, 2020; Averik et al., 2025; WHO, 2019). Beyond finance, the Healthy Universities approach conceptualizes well-being as a function of integrated environments. This framework moves beyond clinical service provision to advocate for health-promoting settings where services are physically proximate, culturally accessible, and embedded in the daily life of the academic community (International Network of Health Promoting Universities & Colleges, 2015). However, in peripheral institutions like the Kaduna State College of Education (KSCOE), Gidan-Waya, spatial isolation undermines this ideal. Geographic separation and high travel costs, such as the 18 km journey to secondary facilities in Kafanchan, act as systemic deterrents, reinforcing the distance-decay effect where utilization drops as geographic friction increases (Averik et al., 2024; Peters et al., 2008).

Applying the multidimensional access framework of Penchansky and Thomas (1981), the KSCOE "Sick Bay" emerges as a superficial indicator that masks deep structural exclusions across the five dimensions of access. The facility's limited clinical scope represents a crisis of Availability, while its isolation from secondary hubs illustrates poor Accessibility. Furthermore, rigid operational hours create an Accommodation barrier, and declining confidence in institutional competence reduces Acceptability. These dynamics align with the Health Belief Model, where perceived barriers outweigh benefits, pushing students toward unqualified patent medicine vendors and self-medication (Ibitoye, 2024; Rosenstock, 1974; Turner et al., 2021).

Ultimately, despite the proliferation of state-level health initiatives, periodic constituency outreaches, and NGO-led interventions, tertiary students remain "medically invisible" within the broader public health discourse (Chibundu, 2024; Labaran, 2023; SKAID, 2025). While statutory mandates ensure that every electoral ward in Kaduna State possesses at least one primary health facility, empirical data suggest that household income has superseded geographic distance as the primary predictor of service utilization (Averik et al., 2025; NPC & ICF, 2019). This phenomenon reveals a persistent proximity–poverty paradox, where the physical presence of infrastructure fails to guarantee access for economically marginalized student populations.

However, a critical lacuna persists in the literature

regarding the institutional–spatial mismatch inherent in rural tertiary settings. While existing scholarship extensively addresses the dual barriers of distance and indigence, it frequently overlooks the Proximity Paradox, a condition in which students remain functionally excluded from care despite their physical closeness to high-capacity mission hospitals and humanitarian networks (Kateri Clinic, 2023). In these instances, the absence of formalized referral pathways and institutional linkages renders geographic proximity irrelevant, as the "gatekeeping" mechanisms of cost and administration remain insurmountable (WHO, 2021).

This study addresses this gap by interrogating how the disconnect between the health architecture of the Kaduna State College of Education (KSCOE) and the surrounding regional clinical capacity creates a spatial trap. By demonstrating that proximity alone cannot resolve systemic exclusion, the research extends contemporary debates on student health access, spatial justice, and the necessity of institutional accountability in campus planning.

2 Materials and Methods

2.1 Study Area

The research was conducted at the Kaduna State College of Education (KSCOE), situated within the Gidan-Waya community. The area is geographically defined by a latitude range of 9°28′00″N to 9°28′25″N and a longitude range of 8°23′47″E to 8°24′21″E (Dogo et al., 2023). In terms of road accessibility, Gidan-Waya is strategically positioned within the southern Kaduna transport corridor, located approximately 18 kilometres southeast of Kafanchan, the administrative headquarters of Jema'a Local Government Area (Binniyat, 2015). The Maraba Kagoro–Gidan Waya road serves as a key arterial route linking the town to regional markets and service centres, with documented pavement conditions affecting travel efficiency (Zakaria et al., 2025).

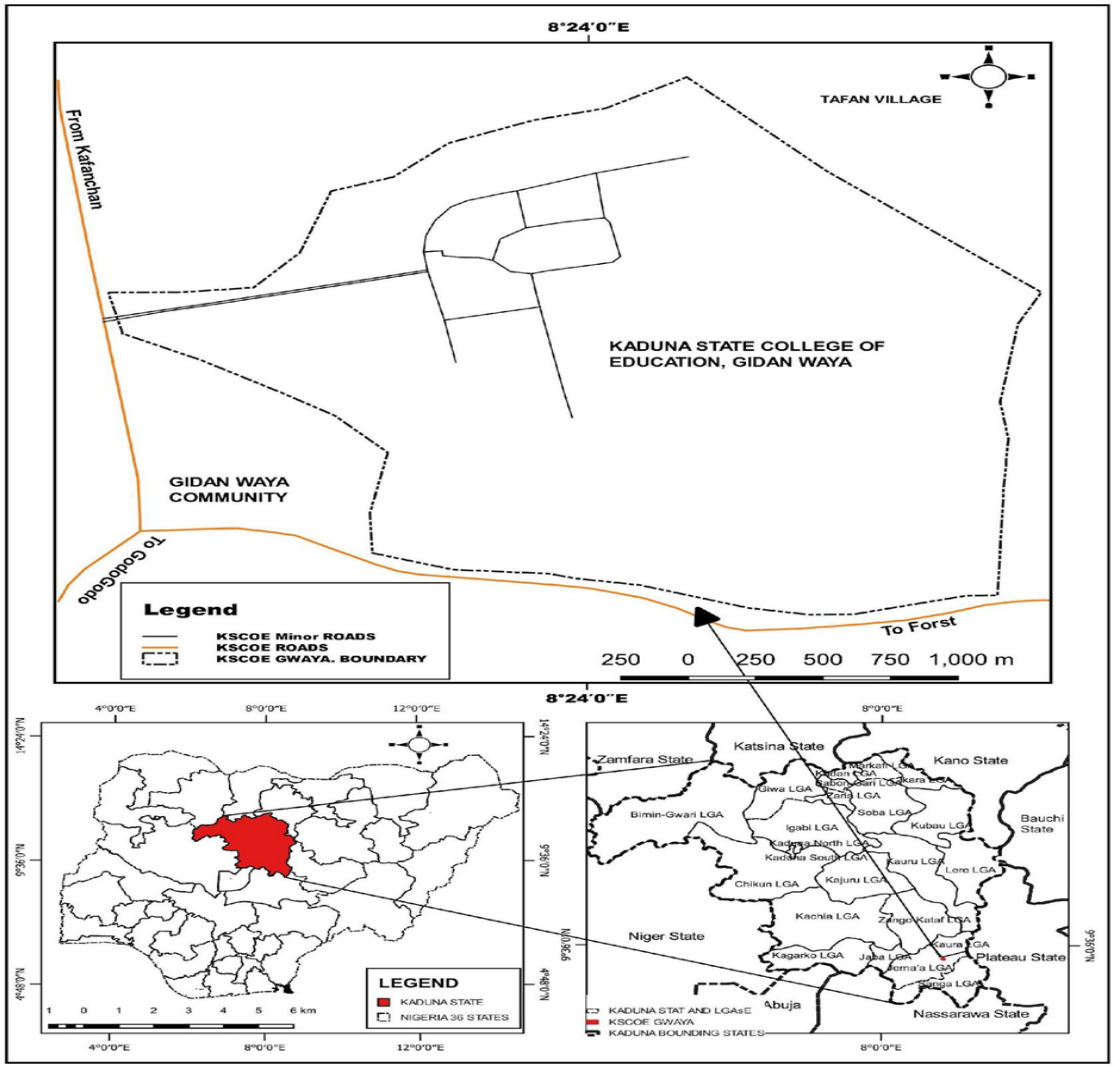

Figure 1: Maps of Nigeria and Kaduna State Showing the Study Area (KSCOE, Gidan-Waya)
Source: Adapted from Map of Nigeria

Geologically, the area is part of the Nigerian Basement Complex, dominated by Precambrian granites and gneisses that form a rugged, undulating terrain (Obaje, 2009). The pedological profile consists of ferruginous tropical soils (Hill, 1975), which are highly susceptible to erosion; this often degrades the unpaved feeder roads that connect student lodges to the central campus.

The hydrological profile of the study area is characterized by a dendritic drainage pattern, typical of the southern Kaduna region. Seasonal streams converge near local settlements, making these areas highly prone to flooding during the rainy season. These flood events create physical barriers that temporarily isolate off-campus student residences from the College Sick Bay and the Gidan-Waya Primary Health Centre (PHC), thereby undermining healthcare accessibility.

Climatologically, the region falls under the Tropical Savanna (*Aw*) classification (Ayoade, 1983). It experiences a mean annual rainfall of approximately 1,800 mm and a mean monthly temperature of 25°C, while the relative humidity is about 63% (Ishaya & Abaje, 2008). These environmental factors significantly compound the "distance-decay" effect; the physical exertion required to reach the campus clinic is exacerbated by the difficult terrain and seasonal weather extremes, particularly during peak precipitation periods. With the Gidan-Waya Ward population estimated to have surged significantly by 2024, the spatial pressure on these limited geographic access points has reached a critical threshold.

2.2 Study Design and Data Collection

This study employed a descriptive cross-sectional survey design grounded in the five dimensions of the access framework proposed by Penchansky and Thomas (1981). The framework guided the operationalization of two principal access dimensions: Accessibility and Accommodation. Accessibility was assessed using the documented 18 km transit distance between the Kaduna State College of Education (KSCOE), Gidan-Waya, and the nearest functional secondary healthcare facility, serving as a contextual spatial indicator of physical access constraints. Accommodation was operationalized as the Academic–Temporal Barrier, defined as the structural mismatch between institutional lecture schedules and healthcare facility operating hours.

The study population comprised 5,335 registered students according to the KSCOE Registry (2024). A sample size of 357 respondents was determined using the Krejcie and Morgan (1970) formula for finite populations at a 95% confidence level and 5% margin of error. To ensure statistical, demographic, and spatial representativeness, a multi-stage sampling technique was implemented in three distinct stages.

Stage I (Stratification): The population was first divided into strata based on the various Schools/Faculties and further sub-stratified by academic level (NCE I–III).

Stage II (Proportional Allocation): The total sample of 357 was distributed across these strata proportionately to maintain the integrity of the population structure.

Stage III (Selection): Systematic random sampling was executed within each sub-stratum using departmental attendance registers as the sampling frame. A sampling interval (k) was determined by dividing the population by the sample size (k = N/n), and participants were selected at regular intervals from a random starting point. This ensured an equal probability of selection and captured diverse transit experiences across both central and peripheral lecture zones.

The primary research instrument was a structured questionnaire designed using a 5-point Likert scale, anchored on the dimensions of Accessibility and Accommodation. Face and content validity were established through a review by three experts in public health, educational administration, and research methodology. A table of specifications confirmed comprehensive coverage of student healthcare needs, parental socio-economic status, and perceptions of medical outreach. Reliability was determined through a pilot study at Kaduna State University (KASU), Kafanchan Campus. Internal consistency, measured via Cronbach's Alpha, yielded a coefficient of alpha = 0.86, exceeding the 0.70 benchmark (Nunnally & Bernstein, 1994) and confirming the instrument's suitability for the study.

2.3 Data Analysis

Quantitative data were processed using frequencies, percentages, and Chi-Square tests to assess variations in healthcare needs across academic levels. To evaluate the "distance-decay" effect, a spatial analysis was applied by cross-tabulating the frequency of clinic visits against the known 18 km transit barrier. This allowed the study to identify how visitation rates diminished as a result of the fixed geographical displacement between the student population and the available healthcare facility.

3 Results and Discussion

Results confirm a profound utilization-need gap (73% need vs. 9% clinic usage) driven by three multi-dimensional barriers:

a. **Spatial**: The 18 km distance creates a physical "cutoff," rendering the clinic inaccessible for acute care.

b. **Temporal**: Academic conflicts limit outreach to <5%, as coursework supersedes health seeking.
c. **Behavioral**: These barriers drive 60% of students toward hazardous self-medication as a high-risk substitute for formal care.

3.1 The Geography of Student Residency and Vulnerability (Affordability)

As shown in Table 1, 81.3% of the student population originates from rural or suburban backgrounds.

Table 1: Distribution of Parental Residence by NCE Level

Residence	NCE I	NCE II	NCE III	Total	Percent
Urban	20	21	15	56	0.187
Sub-Urban	61	60	63	184	0.613
Rural	18	20	22	60	0.2

The demographic profile in Table 1 underscores a high level of economic vulnerability (Affordability). These students lack access to formal health insurance buffers (TISHIP), making the "physical distance" to care an "economic distance" due to the high cost of emergency transport and out-of-pocket medical fees.

3.2 Spatial-Demographic Profile and Attrition (Availability & Acceptability)

The demographic evolution (Table 2) reveals a transition from an adolescent population in NCE I to an 80% adult population in NCE III.

Table 2: Socio-Demographic Profile of Student Respondents (N=357)

Gender	NCE I (%)	NCE II (%)	NCE III (%)
Male	63	72	80
Female	37	28	20
Age Group (Years)			
Below 18	40	12	2
18–22	60	70	18
23–27	0	18	60
28 and above	0	0	0

The results from Table 2 suggest a mismatch in Availability. The current "Sick Bay" model provides basic first aid, which fails to meet the adult reproductive and surgical needs of maturing students. Furthermore, the 17% decline in female representation suggests that the Acceptability of the current health environment is low for female students, who may be forced to withdraw due to unaddressed gender-specific health crises.

3.3 Universal Perception of Healthcare Deficit (Accessibility & Accommodation)

The Chi-square analysis (Table 3) confirms that the perception of health needs is not influenced by academic level ($p = 0.09 > 0.05$).

Table 3: Chi-square Test for Variation in Perception of Healthcare Needs by Academic Level

Variable	df	N	A	X^2	p-value	Decision
Academic Level	8	357	0.05	0.32	0.09	Fail to Reject H_0

From Table 3, failing to reject the null hypothesis (H_0) proves that the deficit is a structural reality. Regardless of how long a student has lived in Gidan-Waya, the Accessibility (the 18km gap) and Accommodation (conflict between lecture hours and clinic opening times) remain insurmountable barriers.

Table 4: Health Prevalence and Access Constraints (N=357)

Health Category	Prevalence (%)	Key Observations
Surgical & Gastrointestinal	52.0	Appendicitis, hernias, and peptic ulcers
Infectious Diseases	29.0	Malaria, Hepatitis (19%), and STIs (18%)
Specialized Health Needs	25.0	Suspected cataracts and visual impairments
Behavioral/Coping Health	17.0	High-risk self-medication and substance use
Clinical Utilization	9.0	Current usage rate of KSCOE Sick Bay

Table 4 highlights a 64-point disparity between reported medical needs (73%) and actual clinic usage (9%). This suggests the "Sick Bay" is a functional outlier; its primary-care scope cannot address the surgical and gastrointestinal burdens (52%) of a maturing student demographic. Trapped by the 18km geographic barrier to secondary care, 17% of students have shifted toward survivalist health behaviors, utilizing high-risk self-medication to fill the institutional void.

4 Discussion

The empirical evidence from KSCOE validates a "Proximity Paradox" where students remain medically invisible despite their location within regional health corridors. We analyze these barriers through the multidimensional lens of Penchansky and Thomas (1981), integrated with the Health Belief Model (HBM).

4.1 Accessibility and the "Geographic Trap."

The 18 km transit gap to Kafanchan is a profound spatial barrier that contradicts the Healthy Universities framework. According to Tsouros et al. (1998), health-promoting campuses must integrate services into students' "daily spatial routines." Instead, this distance creates a terminal "distance-decay" effect, where the "friction of distance" deters formal help-seeking (Adejumo et al., 2023; Stock, 1983).

By failing to provide proximate care, the institution is misaligned with the INHPUC (2015) mandate to "embed health into all aspects of campus operations." For the 81.3% of students from rural backgrounds, this barrier is an economic "spatial trap"—a hallmark of institutional expansion into "medical deserts" where physical isolation dictates health outcomes (Wulifan et al., 2022). This structural determinant ultimately forces 73% of students into unaddressed health needs and hazardous self-medication, undermining the "integrated environment" essential for well-being.

4.2 Availability and the Clinical-Need Gap

The marginal 9% utilization rate at the KSCOE Sick Bay indicates a critical availability-service mismatch. Although the facility is physically present, its limited scope fails to address the 52% of students presenting with surgical and gastrointestinal (appendicitis, hernias, and ulcers), requirements. This discrepancy exemplifies the "clinical obsolescence" noted by Orok et al. (2024), where static primary services cannot accommodate the evolving, more complex disease burden of the student population.

This gap is compounded by extreme demographic pressure; the Gidan-Waya Ward population has surged from 35,200 in 2006 to over 61,000 in 2024. This surge creates a "crowding out" effect where institutional resources are stretched thin by the competing needs of both students and the expanding local residency. Consequently, the Availability of care is diluted, as a facility designed for a college must now serve a de facto community hub of 61,000 people.

4.3 Affordability and the "Poverty Paradox."

Because 81.3% of the student body relies on informal agrarian parental economies, Affordability is the primary "silent gatekeeper." The lack of an operational Tertiary Institutions Social Health Insurance Programme (TISHIP) forces students to rely on out-of-pocket payments. As Adewole et al. (2017) highlight, without financial protection, students are disenfranchised from formal systems, driving the observed 60% self-medication rate and the reliance on unregulated Patent Medicine Vendors (PMVs) (Ibitoye et al., 2024).

4.4 Accommodation: The Academic-Temporal Barrier

The conflict between rigid lecture schedules and clinic hours represents a failure of Accommodation. This "Academic-Temporal Barrier" ensures that students are effectively "timed out" of the healthcare system. This institutional rigidity confirms the Health Belief Model's (HBM) "perceived barriers" (Rosenstock, 1974), where the risk of missing an examination or lecture outweighs the perceived benefit of a clinical consultation, leading to delayed diagnoses and surgical emergencies.

4.5 Acceptability and Gendered Attrition

The 17% decline in female representation between NCE I

and NCE III indicates a skewed acceptability of the campus health system. Female students face distinct barriers in accessing reproductive and preventive health services, with utilization patterns of sexual and reproductive health services highlighting gender-based access issues that intersect with institutional availability and student perceptions (Olayinka et al., 2025; Gashaw & Alemu, 2025). This longitudinal maturation (from 100% adolescents to 80% adults) requires a shift toward the WHO "Healthy Universities" framework (Tsouros et al., 1998), which emphasizes that for a health system to be "acceptable," it must evolve to meet the specific reproductive and adult-health needs of its maturing population.

4.6 Structural Disconnect and Service-Utilization Deficit

The data identifies a profound service-utilization discrepancy, where a 73% reported medical need contrasts with a minimal 9% clinic utilization rate. This 64-point deficit indicates that the campus "Sick Bay" is structurally misaligned with student needs; specifically, the high prevalence of surgical and gastrointestinal issues (52%) exceeds the facility's primary-care capabilities. Furthermore, the significant incidence of Hepatitis (19%) and STIs (18%) reflects an epidemiological burden shared with the surging Gidan-Waya population. Lacking the traditional safety nets of the host community, 17% of students have adopted survivalist health behaviors, including high-risk self-medication, to bypass the 18km geographic and economic barriers to secondary care.

4.7 Synthesis: The Coordination Gap

This study identifies a critical coordination gap resulting in student "structural invisibility." Although high-capacity facilities such as the Arthur and Esther Bradley Memorial Anglican Hospital in (Gidan-Waya) exist in the region (Kateri Clinics 2023), the absence of formal institutional linkages creates a referral vacuum. This fragmentation (WHO, 2016) prevents available regional health assets from improving student outcomes. To bridge this gap, the KSCOE Sick Bay must transition from a reactive primary unit to an integrated Secondary Medical Centre capable of maintaining formalized external partnerships and referral pathways.

4.8 Policy Implications: Operationalizing the Okanagan Charter

Based on the identified clinical obsolescence and the 64-point utilization–need gap, the following strategic shifts are required to fulfill the Okanagan Charter's Call to Action:

i. Embedding Health through Reclassification (Availability): State policy must reclassify the KSCOE facility from a "Sick Bay" to a Secondary Health Hub. The 52% surgical need confirms that health must be "embedded into campus operations" (Charter Action 1) by providing on-site diagnostic and surgical capacity. This ensures the facility is no longer a reactive first-aid post but a proactive setting that supports the complex health mandates of 5,335 students and 61,000 residents.

ii. Lead Local Collaboration for Accessibility: To lead "health promotion action locally" (Charter Action 2), future budgeting must adopt a Two-Tier Spatial System. This includes an upgraded central campus hub and mobile health outposts within residential clusters. By minimizing travel distances, the institution dismantles the geographic barriers identified by Averik et al. (2024), ensuring service reach is dictated by student need rather than proximity.

iii. Financial Buffers for Affordability: The mandatory implementation of TISHIP is essential to protect students, 81.3% of whom are from rural backgrounds, from the "spatial trap" of out-of-pocket costs. This aligns with the Charter's vision of health as a prerequisite for academic success, removing the financial barriers that drive 60% of students toward hazardous self-medication.

iv. Diversifying for Acceptability: To ensure the campus environment is "culturally and clinically acceptable," services must expand to include optometry (addressing the 25% visual impairment rate) and reproductive health. Diversifying the clinical scope ensures the facility evolves with the maturing needs of the student body, directly supporting academic retention.

5 Conclusion

The study concludes that KSCOE students are currently caught in a "spatial and institutional trap." The stark mismatch between medical needs (73%) and clinic utilization (9%) proves that the "Sick Bay" model is clinically obsolete. This failure is driven by an 18km isolation from secondary care and a regional "crowding out" effect from a ward population of 61,000. Without a structural upgrade to Secondary-Level status, students will remain "structurally invisible," forced into risky health behaviors that undermine the Okanagan Charter's goal of integrated well-being.

Based on this evidence, the study proposes the following Charter-aligned interventions:

i. Institutional Upgrade (Action: Embed Health): The Kaduna State Government should upgrade the KSCOE Sick Bay to a Secondary-Level Medical Centre. Providing on-site surgical and laboratory capacity fulfills the Charter's mandate to integrate health into the institutional fabric, ensuring student needs are not sidelined by regional demographic pressures.

ii. Student-Centered Outreach (Action: Lead Collaboration): The college should institutionalize partnerships with the Hon. Daniel Amos Foundation, SKAID Foundation, and Kateri Clinics. These missions provide a critical "accommodation" fix, bringing specialized care directly into the student's daily spatial routine without conflicting with academic schedules.

iii. Town-Gown Partnerships (Action: Lead Locally): Management should formalize a referral partnership with the Arthur and Esther Bradley Memorial Anglican Hospital. By establishing satellite health kiosks and a mobile shuttle service, the college "de-fragments" the spatial health landscape, fulfilling the Charter's call to lead health promotion through local collaborative action.

References

Adebola, O. G. (2020). Universal health coverage in Nigeria and its determinants: The case of the National Health Insurance Scheme. Academic Review of Humanities and Social Sciences, 3(1), 97–111. https://izlik.org/JA56ED36DT

Adejumo, O. A., Abolarin, O. S., Akinbodewa, A. A., Enikuomehin, O. C., & Lawal, O. M. (2023). Assessment of students' satisfaction with university health care services in a medical university in southern Nigeria. Research Journal of Health Sciences, 7(1), 48–56. https://rjhs.org/index.php/home/article/view/198

Adewole, D. A., Akanbi, S. A., Osungbade, K. O., & Bello, S. (2017). Expanding health insurance scheme in the informal sector in Nigeria: Awareness as a potential demand-side tool. The Pan African Medical Journal, 27, 52. https://doi.org/10.11604/pamj.2017.27.52.11092

Afolabi, M. O., Daropale, V. O., Irinoye, A. I., & Adegoke, A. A. (2013). Health-seeking behavior and student perception of health care services in a university community in Nigeria. Health, 5, 817–824. https://doi.org/10.4236/health.2013.55108

Alkhawaldeh, A. (2017). Factors associated with utilisation of university health centre services by students. International Journal of Community Medicine and Public Health, 4(6), 2121–2127. https://doi.org/10.18203/2394-6040.ijcmph20172145

Alvarez-Hernandez, L. R., Childs, E. M., Fatehi, M., & Yeo, H. (2024). How perception relates to student utilization of college campus counseling services. Journal of American College Health, 72(8), 2738–2746. https://doi.org/10.1080/07448481.2022.2129973

Averik, P. D., Obafemi, A. A., Ogoro, M., Ndabula, C., Jidauna, G. G., & Akawu, C. B. (2024). Spatial analysis of physical accessibility to public primary healthcare centers in Kaduna State, Nigeria. FUDMA Journal of Earth and Environmental Sciences (FUDJEES), 1(1), 86–96. https://doi.org/10.33003/jees.2024.0101/07

Averik, P. D., Obafemi, A. A., Eludoyin, O. S., Ogoro, M., Ndabula, C., & Jidauna, G. G. (2025). Geospatial inequities in access to public primary healthcare centers: Socioeconomic vulnerability and policy drivers in Kaduna State, Nigeria. Kaduna Journal of Geography, 7(1), 157–164. https://doi.org/10.47514/kjg.2025.07.01.018

Ayoade, J. O. (1983). Introduction to climatology for the tropics (2nd ed.). Spectrum Books.

Binniyat, L. (2015, March 15). Tension in Southern Kaduna over the killing of 3 Catholics. Vanguard Nigeria. https://www.vanguardngr.com/2015/03/tension-in-southern-kaduna-over-the-killing-of-3-catholics/

Chibundu, J. (2024, October 29). Kaduna targets 500k residents in free health screening programme. TheCable. https://www.thecable.ng/kaduna-targets-500k-residents-in-free-health-screening-programme/

Dogo, S., Enam, J. W., & James, O. (2023). Evaluation of gully erosion effects in Gidan Waya, Jema'a L.G.A of Kaduna State, Nigeria. International Journal of Innovation Research & Advanced Studies, 20(2), 107–118. https://www.africanscholarpublications.com/wp-content/uploads/2023/04/HAJIRAS_VOL20_NO2_MAR-2023-10.pdf

Dumedah, G., Iddrisu, S., Asare, C., Adu-Prah, S., & English, S. (2023). Inequities in spatial access to health services in Ghanaian cities. Health Policy and Planning, 38(10), 1166–1180. https://doi.org/10.1093/heapol/czad084

Gashaw, Y., & Alemu, C. (2025). Assessment of family planning service utilization and associated factors among female students at Assosa University, Ethiopia. Scientific Reports, 15, Article 11661. https://doi.org/10.1038/s41598-025-94511-2

Hiliya, A. A. & Yahaya, A. (2025). Availability, utilization, and contribution of students' health services at tertiary institutions in Sokoto, Nigeria. EDUMALSYS Journal of Research in Education Management, 3(1), 78–86.

https://doi.org/10.58578/edumalsys.v3i1.5108

Hill, I. D. (1975). Interim report of the land reforms, soil and vegetation of the Jema'a platform (Vols. 1–3). Land Resources Division, U.K. Ministry of Overseas Development.

Ibitoye, J. O., Asaolu, O., Amao, A., et al. (2024). A cross-sectional assessment of expanding basic healthcare services to rural and underserved communities through proprietary patent medicine vendors in Northern Nigeria. PLOS Global Public Health, 4(9), e0003671. https://doi.org/10.1371/journal.pgph.0003671

International Network of Health Promoting Universities & Colleges (INHPUC). (2015). Okanagan Charter: An international charter for health promoting universities and colleges. Outcome of the 2015 International Conference on Health Promoting Universities and Colleges, Kelowna, British Columbia, Canada. https://hea.ie/assets/uploads/2023/03/Okanagan_Charter_ENGLISH_2015.pdf

Ishaya, S., & Abaje, I. B. (2008). Indigenous people's perception on climate change and adaptation strategies in Jema'a Local Government Area of Kaduna State, Nigeria. Journal of Geography and Regional Planning, 1(8), 138–143. http://www.academicjournals.org/JGRP

Kaduna State College of Education, Gidan-Waya. (2025). Registry records of student enrolment for the 2024/2025 academic session. College Registry Department.

Kateri Clinic. (2023). Arthur and Esther Bradley Memorial Anglican Hospital. Retrieved August 26, 2025, from https://www.katericlinic.org/

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement, 30(3), 607–610. https://doi.org/10.1177/001316447003000308

Labaran, A. (2023, December 4). Rep. Amos organises free medical programme for constituents. Blueprint NG. https://blueprint.ng/rep-amos-organises-free

Musakwa, N. O., Bor, J., Nattey, C., Lönnermark, E., Nyasulu, P., & Long, L. (2021). Perceived barriers to the uptake of health services among first-year university students in Johannesburg, South Africa. PLoS ONE, 16(1), e0245427. https://doi.org/10.1371/journal.pone.0245427

National Population Commission (NPC). (2009). 2006 population and housing census of the Federal Republic of Nigeria: National and state population tables. NPC.

National Population Commission (NPC), & ICF. (2019). Nigeria demographic and health survey 2018. NPC & ICF.

Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric theory (3rd ed.). McGraw-Hill.

Obaje, N. G. (2009). Geology and mineral resources of Nigeria. Springer Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-92685-6

Olayinka, O. S., Oduoye, S. O., Ayoola, O. E., & Alake, I. D. (2025). Utilization of sexual and reproductive health services among undergraduate students in the University of Ilorin, Kwara State, Nigeria. Asian Journal of Pregnancy and Childbirth, 8(1), 254–262. https://doi.org/10.9734/ajpcb/2025/v8i1164

Orok, E., Nwifama, S., Oni, O., Ojo, T., Oluwadare, T., Bamitale, T., Jaiyesimi, B., Saka, A., Apara, T., & Kukoyi, O. (2024). Students' perception of healthcare services and factors affecting their utilization at a Nigerian University: A cross-sectional study. Scientific Reports, 14(1), 23893. https://doi.org/10.1038/s41598-024-75573-0

Osborn, T. G., Town, R., Bawendi, M., Stapley, E., Saunders, R., & Fonagy, P. (2024). University students' access to mental health services: A qualitative study of the experiences of health service professionals through the lens of candidacy in England. Journal of Health Services Research & Policy, 29(4), 230–239. https://doi.org/10.1177/13558196241235877

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2015). College students: Mental health problems and treatment considerations. Academic Psychiatry, 39(5), 503–511. https://doi.org/10.1007/s40596-014-0205-9

Penchansky, R., & Thomas, J. W. (1981). The concept of access: Definition and relationship to consumer satisfaction. Medical Care, 19(2), 127–140. https://doi.org/10.1097/00005650-198102000-00001

Peters, D. H., Garg, A., Bloom, G., Walker, D. G., Brieger, W. R., & Rahman, M. H. (2008). Poverty and access to health care in developing countries. Annals of the New York Academy of Sciences, 1136, 161–171. https://doi.org/10.1196/annals.1425.011

Pliannuom, S., Treerutkuarkul, A., & Hounnaklang, N. (2021). Utilization of health care services and common disease diagnoses among university students: An analysis of 35,249 students from Thailand. International Journal of Environmental Research and Public Health, 18(13), 7148. https://doi.org/10.3390/ijerph18137148

Rosenstock, I. M. (1974). The health belief model and preventive health behavior. Health Education Monographs, 2(4), 354–386.

Southern Kaduna Aid Foundation (SKAID). (2025). SKAID 2025 outreach expands to five LGAs in Southern Kaduna. https://www.skaidfoundation.org/skaid-medical-outreach-2025/

Stock, R. (1983). Distance and the utilization of health facilities in rural Nigeria. Social Science & Medicine, 17(9), 563–570. https://doi.org/10.1016/0277-9536(83)90298-8

Tsouros, A. D., Dowding, G., Thompson, J., & Dooris, M. (1998). Health Promoting Universities: Concept, experience and framework for action. World Health Organization. https://iris.who.int/handle/10665/108095

Turner, J. C., & Keller, A. (2015). College Health Surveillance Network: Epidemiology and health care utilization of college students at U.S. 4-year universities. Journal of American College Health, 63(8), 530–538. https://doi.org/10.1080/07448481.2015.1055567

Volpe, U., Ventriglio, A., Bellomo, A., et al. (2019). Mental health and wellbeing among Italian medical students: A descriptive study. International Review of Psychiatry, 31, 569–573. https://doi.org/10.1080/09540261.2019.1654718

Wao, H., Wao, M. A., Omollo, S. B., et al. (2025). Availability, accessibility, and utilization of mental health services or support among university students in Africa: A mixed-methods systematic review with meta-analysis and meta-synthesis. BMC Psychiatry, 25, Article 1082. https://doi.org/10.1186/s12888-025-07529-1

World Health Organization (WHO) (2016). UHC in Africa: a

framework for action. World Health Organization. https://iris.who.int/handle/10665/341157

World Health Organization (WHO). (2019). Global health expenditure database: Nigeria summary. Geneva, Switzerland: WHO. https://apps.who.int/nha/database

World Health Organization (WHO). (2021). Universal health coverage. Geneva: World Health Organization. https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage

Wulifan, J. K., Guba, B. Y., & Mwingyine, D. T. (2022). Students' health care seeking behaviour and perception about health care services at SD Dombo University in a resource-poor setting in Northern Ghana. Open Access Library Journal, 9(11). https://doi.org/10.4236/oalib.1109481

Zakaria, Y. B., Ephraim, G. M., & Abaleni, I. J. (2025). Investigation of the causes of road pavement failure along Maraba Kagoro–Gidan Waya Road, Kaduna State, using electrical resistivity tomography. International Journal of Earth Design and Innovation Research, 10(4). https://doi.org/10.70382/mejedir.v10i4.062