INT'L RESEARCH JOURNAL OF TRANSDISCIPLINARY PERSPECTIVE (IRJTP)
E-ISSN: 3121-9071 - **Vol**. 2 **Issue** 3, 2026
https://journals.chroniva.org/index.php/IRJTP

URBAN ENVIRONMENTAL PLANNING AND ITS INFLUENCE ON NON-COMMUNICABLE DISEASE PREVENTION AMONG URBAN RESIDENTS IN THE FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA

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Abstract

Urban environments increasingly influence population health by shaping opportunities for physical activity, healthy dietary practices, exposure to pollutants and access to supportive community resources. This study examined the influence of urban environmental planning on non-communicable disease (NCD) prevention among adult residents of Abuja Municipal Area Council (AMAC), Federal Capital Territory, Nigeria. A quantitative cross-sectional survey design was adopted. A sample of 422 adult residents was selected through a multistage sampling procedure, while 403 valid questionnaires were analysed using descriptive statistics, Pearson Product Moment Correlation and multiple regression analysis. Findings revealed that urban environmental

planning conditions were moderate overall (mean = 2.68), although access to green spaces and recreational facilities and air-quality conditions were rated low. Respondents demonstrated a moderate level of NCD-prevention practices (mean = 2.76), with awareness of NCD risk factors recording the highest rating and avoidance of pollution exposure recording the lowest. Significant positive relationships existed between walkability and transport infrastructure, green-space availability, sanitation and waste management, air-quality conditions, housing environment, healthy food environments and NCD-prevention practices. Urban environmental planning dimensions jointly explained 35.8% of the variation in NCD-prevention practices. The study concludes that health-oriented urban planning can support NCD prevention by creating environments that encourage active mobility, healthier food choices, improved sanitation, cleaner air and access to recreational facilities. The findings contribute evidence for integrating public health considerations into urban development strategies in Nigerian cities.

Keywords: Environmental planning; Non-communicable diseases; Urban health; Walkability; Nigeria

Introduction

Urban growth has transformed the way people live, move, work and interact with their surroundings. In many cities, health outcomes are no longer determined only by individual choices or access to healthcare services. The physical and social environments surrounding residents increasingly influence behaviours associated with chronic disease prevention, including physical activity, dietary practices, exposure to environmental pollutants and opportunities for recreation. Non-communicable diseases (NCDs), particularly cardiovascular diseases, cancers, diabetes and chronic respiratory diseases, have become major causes of illness and premature mortality globally. The World Health Organization identifies unhealthy diet, insufficient physical activity, tobacco use, harmful alcohol consumption and environmental exposures as major contributors to NCD burden (World Health Organization [WHO], 2025).

Urban environmental planning provides an important pathway for addressing these challenges because decisions concerning land use, transportation systems, housing, green spaces, sanitation services, waste management and food environments influence everyday health behaviours. Cities designed with safe pedestrian routes, accessible recreational spaces and efficient public transportation systems can encourage active living and reduce sedentary lifestyles. Conversely, poorly planned urban environments may limit physical activity, increase pollution exposure and encourage unhealthy dietary choices.

The relationship between urban planning and health has become increasingly relevant in rapidly expanding cities of low- and middle-income countries. Many African cities experience population growth without corresponding improvements in infrastructure, resulting in traffic congestion, inadequate pedestrian facilities, poor waste disposal systems, limited green areas and uneven access to essential services. These challenges create environments where residents may encounter multiple NCD risk factors simultaneously.

In Nigeria, urbanisation has contributed to significant changes in lifestyle patterns and environmental exposures. Growing cities such as Abuja have experienced rapid expansion, increased vehicular movement, commercial development and changing food environments. Although Abuja was originally designed as a planned city, continuous expansion has produced variations in neighbourhood conditions, including differences in transport accessibility, recreational facilities, sanitation services and environmental quality.

Recent Nigerian evidence demonstrates the importance of urban environments in shaping NCD risks. Ugbede et al. (2025) reported that frequent consumption of street foods among adults in Lagos, Abuja and Enugu was associated with increased likelihood of hypertension and diabetes. Their findings highlight the role of urban food environments in influencing dietary behaviours and chronic disease outcomes. However, food consumption represents only one dimension of the urban environment. Broader planning factors such as mobility systems, green infrastructure, waste management, housing conditions and air-quality regulation remain insufficiently examined within Nigerian urban health research.

Existing studies have often focused on specific NCD risk factors or individual behaviours rather than considering urban environmental planning as an integrated preventive strategy. This creates a gap in understanding how multiple planning conditions collectively influence residents' ability to adopt healthier practices. Examining this relationship in Abuja is important because the city contains diverse neighbourhood forms, ranging from highly planned districts to rapidly developing residential areas and communities with varying levels of infrastructure provision.

Statement of the Problem

Despite increasing awareness of NCD prevention, many urban environments continue to present conditions that make healthy living difficult. Limited access to recreational spaces, unsafe walking conditions, inadequate waste management, pollution exposure and unhealthy food environments may increase residents' vulnerability to hypertension, diabetes, obesity and respiratory diseases.

In the Federal Capital Territory, Abuja's rapid urban expansion has created differences in environmental quality across communities. Some neighbourhoods benefit from improved infrastructure, while others experience challenges related to mobility, sanitation, drainage,

pollution and access to health-supportive facilities. These differences raise questions about whether current urban environmental planning practices adequately support NCD prevention.

Although Ugbede et al. (2025) provided evidence linking urban food practices with hypertension and diabetes among Nigerian adults, there remains limited empirical evidence examining how multiple urban planning dimensions collectively influence NCD prevention. Without such evidence, urban development decisions may continue to focus mainly on physical expansion and economic activities without sufficient consideration of population health outcomes.

Therefore, this study examined the influence of urban environmental planning on non-communicable disease prevention among adult residents of Abuja Municipal Area Council, Federal Capital Territory, Nigeria.

Objective of the Study

The main objective of this study was to examine the influence of urban environmental planning on non-communicable disease prevention among urban residents in the Federal Capital Territory, Abuja.

Literature Review

1 Conceptual Review

1.1 Urban Environmental Planning

Urban environmental planning refers to the systematic process of organising and managing urban spaces in ways that balance human activities, infrastructure development, environmental protection and quality of life. It involves decisions concerning land use, transportation networks, housing development, public spaces, sanitation systems, waste management, drainage, environmental regulation and access to essential services. Contemporary approaches to urban planning increasingly recognise that city design affects population health by influencing how people move, obtain food, interact socially and experience environmental exposures (United Nations Human Settlements Programme [UN-Habitat] & WHO, 2020).

Traditional urban planning approaches often focused mainly on physical expansion, economic activities and infrastructure provision. However, increasing evidence suggests that urban planning decisions have direct implications for disease prevention. The location of residential areas, availability of pedestrian routes, accessibility of parks, quality of public transport and management of environmental hazards can determine whether residents are exposed to health-supporting or health-threatening conditions.

A health-oriented urban planning approach considers the city as an environment that can either encourage or discourage healthy behaviours. For example, neighbourhoods with safe sidewalks,

functional public transport systems and accessible recreational facilities provide opportunities for routine physical activity. In contrast, environments characterised by unsafe roads, traffic congestion, inadequate public spaces and poor environmental management may encourage sedentary lifestyles and increase exposure to pollutants.

Urban environmental planning has several interconnected dimensions relevant to public health. These include:

(a) Walkability and Transport Infrastructure

Walkability describes the extent to which an urban area supports safe, convenient and comfortable walking. Features such as connected roads, pedestrian pathways, street lighting, safe crossings and mixed land use influence residents' willingness to walk or engage in active transport.

Transport systems also affect health through their influence on physical activity and environmental exposure. Cities that depend heavily on private motor vehicles may experience increased traffic congestion and air pollution, while well-designed public transport systems and active mobility infrastructure can support healthier lifestyles.

Zhang et al. (2024) reported that pedestrian-friendly neighbourhood characteristics, access to public spaces, safety and availability of local services were associated with increased physical activity across different population groups. However, the authors noted that the effect of built environments varies according to local conditions, socioeconomic factors and methods used for measuring environmental characteristics.

(b) Green Spaces and Recreational Facilities

Green spaces include parks, gardens, urban trees, recreational fields and other natural areas incorporated into urban environments. These spaces contribute to health by providing opportunities for exercise, relaxation, social interaction and environmental improvement.

Beyond their aesthetic value, green spaces may influence NCD prevention through several mechanisms. They encourage physical activity, reduce exposure to urban heat, improve psychological wellbeing and may contribute to better air quality. Sharifi et al. (2024) found that greater access to green spaces was associated with reduced likelihood of cardiometabolic risk factors, including hypertension, obesity and diabetes.

However, the presence of green spaces alone does not guarantee health benefits. Issues such as safety, accessibility, maintenance and proximity determine whether residents can practically use these facilities.

(c) Sanitation, Waste Management and Environmental Quality

Sanitation and waste management are essential components of healthy urban environments. Poor waste disposal, blocked drainage channels, flooding and inadequate sanitation facilities can create environmental conditions that increase exposure to harmful substances and reduce quality of life. Although sanitation challenges are often discussed in relation to infectious diseases, they also have implications for NCD prevention. Poor waste practices may contribute to air pollution through open burning, while poorly managed urban spaces can discourage outdoor activities and increase environmental stress.

In Nigerian urban communities, environmental challenges such as flooding, heat exposure and air pollution have been associated with increased health concerns among vulnerable populations (Ugwuanyi et al., 2024). These findings demonstrate the importance of integrating environmental management into urban health planning.

(d) Air Quality and Pollution Control

Air quality is an important environmental determinant of chronic disease. Urban residents may be exposed to pollutants from vehicle emissions, industrial activities, household generators, open waste burning and construction activities. Long-term exposure to polluted air has been linked with cardiovascular diseases, respiratory illnesses and other chronic conditions.

WHO (2024a) identifies air pollution reduction as an essential component of NCD prevention. Effective pollution control requires coordinated actions involving transport planning, industrial regulation, energy policies and waste-management systems.

In rapidly expanding cities, controlling pollution requires more than individual behaviour change. Urban policies that regulate emission sources and encourage cleaner transport options are necessary for reducing population-level exposure.

(e) Urban Food Environment

The urban food environment includes the availability, accessibility, affordability and marketing of different food choices within communities. It influences dietary behaviours by shaping what foods residents can easily purchase and consume.

Rapid urbanisation has changed food patterns in many Nigerian cities. Increased availability of processed foods, sugary beverages and street foods has raised concerns regarding dietary risks associated with NCDs. Pineda et al. (2024) reported that neighbourhood food environments dominated by unhealthy food outlets were associated with poorer dietary outcomes and increased obesity risk.

In Nigeria, Ugbede et al. (2025) examined urban street-food consumption among adults in Lagos, Abuja and Enugu and reported associations between frequent street-food consumption and hypertension and diabetes. Their findings highlight the need for healthier urban food policies, improved food regulation and increased availability of affordable nutritious alternatives.

1.2 Concept of Non-Communicable Diseases and Prevention

Non-communicable diseases are chronic conditions that cannot be transmitted directly from one person to another. The major categories include cardiovascular diseases, cancers, diabetes and chronic respiratory diseases. These conditions often develop through interactions between genetic factors, lifestyle behaviours, social conditions and environmental exposures (WHO, 2025).

The prevention of NCDs involves reducing exposure to known risk factors and creating conditions that support healthy living. Prevention occurs at three levels:

Primary Prevention

Primary prevention focuses on preventing disease occurrence by reducing exposure to risk factors. It includes promoting physical activity, encouraging healthy diets, reducing pollution exposure and creating supportive environments.

Urban environmental planning contributes mainly to primary prevention because it affects the conditions under which individuals make daily health decisions.

Secondary Prevention

Secondary prevention involves early detection and management of diseases before complications develop. Examples include blood pressure screening, diabetes testing and early identification of cardiovascular risks.

Tertiary Prevention

Tertiary prevention focuses on reducing complications among individuals already living with chronic diseases through treatment, rehabilitation and long-term management.

For urban populations, prevention strategies must move beyond healthcare facilities and address environmental conditions that influence daily behaviours.

2 Theoretical Framework

2.1 Socio-Ecological Model

This study is anchored on the Socio-Ecological Model developed from earlier ecological approaches to health behaviour and later expanded by McLeroy et al. (1988). The model explains that health outcomes are influenced by multiple interacting levels, including individual

characteristics, interpersonal relationships, community environments, organisations and public policies.

The model challenges the idea that health outcomes are determined only by personal choices. Instead, it argues that individuals operate within social and physical environments that influence available choices and behaviours.

At the individual level, NCD prevention may depend on personal knowledge, dietary habits, physical activity patterns and health-seeking behaviour. At the community level, factors such as neighbourhood safety, transportation systems, availability of parks, food outlets and environmental quality influence opportunities for healthy living. The model is relevant to this study because urban environmental planning represents a community and policy-level factor that shapes individual health behaviours. A resident may understand the importance of exercise but may be unable to maintain physical activity if the neighbourhood lacks safe walking routes or recreational facilities. Similarly, healthy dietary intentions may be affected by the surrounding food environment.

Therefore, the Socio-Ecological Model provides a framework for understanding how urban planning conditions influence NCD prevention beyond individual responsibility.

2.2 Healthy Cities Approach

The Healthy Cities Approach provides an additional perspective for understanding the relationship between urban planning and population health. The approach, promoted by WHO, argues that health should be incorporated into all aspects of city development, including transportation, housing, environmental management, food systems and community participation (WHO, 2024b).

The approach views cities as environments capable of either improving or worsening health outcomes. It emphasises collaboration between government agencies, planners, healthcare professionals, communities and other stakeholders.

For this study, the Healthy Cities Approach explains why urban development decisions should consider health outcomes before implementation. The provision of green spaces, effective waste-management systems, clean transportation, safe public areas and healthier food environments represents a practical application of this framework.

Together, the Socio-Ecological Model and Healthy Cities Approach provide a foundation for examining how urban environmental planning influences NCD prevention among residents of Abuja.

3 Empirical Review

Research examining urban environments and NCD prevention has expanded significantly in recent years. Evidence from different settings indicates that features of the built environment influence physical activity, dietary behaviours and exposure to environmental hazards.

Zhang et al. (2024) reviewed evidence on built environments and physical activity and found that walkability, neighbourhood safety, parks and accessible services were positively associated with physical activity. However, they noted that most evidence comes from developed countries, creating uncertainty regarding applicability to rapidly urbanising African cities.

Althoff et al. (2025), using movement data from millions of smartphone users across urban areas in the United States, reported that relocation to more walkable communities increased physical activity levels. Although the study provides strong evidence regarding built environments, differences in transport systems and urban structures limit direct application to Nigerian cities.

Sharifi et al. (2024) found that access to green spaces was associated with reduced cardiometabolic risk factors. Nevertheless, they emphasised that accessibility, safety and quality of green spaces determine their actual health benefits.

Within Nigeria, Ugbede et al. (2025) contributed important evidence by demonstrating relationships between urban street-food consumption and NCD indicators among adults in selected cities. However, their study focused primarily on food-related behaviours and did not examine broader urban planning factors.

This limitation demonstrates the need for studies that investigate urban environmental planning as a combined influence involving transport, green spaces, sanitation, pollution control and food environments. The present study addresses this gap by examining how these dimensions collectively influence NCD prevention among residents of Abuja Municipal Area Council.

Methods

1 Research Design

The study adopted a quantitative cross-sectional survey design to examine the influence of urban environmental planning on non-communicable disease (NCD) prevention among adult residents of Abuja Municipal Area Council (AMAC), Federal Capital Territory, Nigeria. The design was considered appropriate because it enabled the collection of information on existing urban environmental conditions and health-related preventive practices among residents at a specific period. The study did not involve manipulation of variables; rather, it assessed the extent to which environmental planning conditions were associated with NCD-prevention behaviours.

The independent variable was urban environmental planning, measured through walkability and transport infrastructure, access to green spaces and recreational facilities, sanitation and waste management, air-quality conditions, housing and neighbourhood environment, and urban food-environment conditions. The dependent variable was NCD prevention, assessed through physical activity, healthy dietary practices, routine health screening, awareness of NCD risk factors and avoidance of environmental exposures.

2 Study Area

The study was conducted in Abuja Municipal Area Council (AMAC), one of the six Area Councils within the Federal Capital Territory (FCT), Nigeria. AMAC contains several major administrative, commercial and residential districts of Abuja and includes twelve electoral wards: City Centre, Garki, Kabusa, Wuse, Gwarinpa, Jiwa, Gui, Karshi, Orozo, Karu, Nyanya and Gwagwa.

AMAC was selected because it represents diverse urban development patterns. The area includes highly planned districts, expanding residential communities, commercial zones and densely populated neighbourhoods with varying levels of infrastructure development. These differences provide an opportunity to examine how environmental planning conditions influence residents' ability to engage in NCD-prevention practices.

3 Target Population

The target population comprised adult residents aged 18 years and above living within AMAC. The 2006 National Population Census recorded a population of 778,567 persons in AMAC, consisting of 422,133 males and 356,434 females (National Population Commission [NPC], 2006).

Residents who had lived within AMAC for at least six months were eligible because they were expected to have adequate experience of their neighbourhood conditions, including transportation systems, sanitation services, food environments and environmental quality. Individuals below 18 years, visitors and residents who had stayed in the area for less than six months were excluded.

4 Sample Size Determination

The sample size was determined using Cochran's formula for large populations:

$$n0 = \frac{Z^2\, p(1-p)}{d^2}$$

Where:

n_0 = required sample size
Z = standard normal deviation at 95% confidence level (1.96)
p = estimated proportion of population possessing the characteristics of interest (0.50)
d = acceptable margin of error (0.05)

Therefore:

$$n0 = \frac{1.96^2\ (0.50)(1 - 0.50)}{0.05^2}$$

$$n0 = \frac{384.16\ \ (0.50)(0.50)}{0.0025}$$

$$n0 = 384.16$$

The minimum sample size was approximated to 384 respondents. To compensate for possible non-response and incomplete questionnaires, a 10% allowance was added.

384 + (10% X 384) = 422

Thus, the final sample size for the study was 422 adult residents.

5 Sampling Technique

A multistage sampling procedure was employed.

At the first stage, the twelve wards within AMAC were identified, and four wards were selected through simple random sampling. The selected wards were Garki, Wuse, Gwarinpa and Nyanya.

At the second stage, three residential clusters were selected from each ward using simple random sampling, resulting in twelve sampled clusters. The selected locations represented different neighbourhood characteristics, including variations in pedestrian facilities, transport access, sanitation services, recreational facilities and environmental conditions.

At the third stage, questionnaires were distributed proportionally across the selected wards. Garki and Wuse received 106 questionnaires each, while Gwarinpa and Nyanya received 105 questionnaires each.

At the final stage, systematic household sampling was applied. Every fifth occupied household was approached after the first household was randomly selected. Where more than one eligible adult was available in a household, one respondent was selected through simple balloting.

6 Data Collection Instrument

Data were collected using a structured questionnaire developed from the study objectives and existing literature on urban health, environmental planning and NCD prevention.

The questionnaire consisted of four sections.

Section A collected demographic information, including age, sex, marital status, educational level, employment status, income level and duration of residence.

Section B measured urban environmental planning conditions. Items assessed pedestrian infrastructure, road safety, street lighting, transport accessibility, green spaces, recreation facilities, drainage systems, sanitation, waste management, housing conditions and perceived air quality.

Section C assessed the urban food environment, including accessibility of fruits and vegetables, availability of processed foods, sugary drinks, fast foods and street foods.

Section D measured NCD-prevention practices, including physical activity, dietary behaviours, health screening practices, awareness of risk factors and environmental exposure avoidance.

Responses were measured using a five-point Likert scale.

7 Validity and Reliability of Instrument

The questionnaire was subjected to face and content validity assessment by three experts in relevant fields: Urban and Regional Planning, Public Health/Environmental Health and Research Measurement and Evaluation.

The experts examined the relevance, clarity and adequacy of the questionnaire items. Their recommendations were incorporated before the final instrument was administered.

A pilot study was conducted among 40 adult residents of Bwari Area Council, FCT, which was not included in the main study. The reliability of the instrument was tested using Cronbach's alpha coefficient. The instrument produced an overall reliability coefficient of 0.81, indicating satisfactory internal consistency.

8 Data Collection Procedure

Data collection was conducted by the researcher and trained research assistants. Before administration, the research team received orientation on questionnaire procedures, ethical requirements and respondent selection methods.

Questionnaires were administered directly to selected residents after obtaining informed consent. Respondents who required assistance were guided through interviewer-administered completion.

A total of 422 questionnaires were distributed. Completed questionnaires were reviewed daily to ensure completeness and consistency before coding and analysis.

9 Ethical Considerations

Ethical approval was obtained from the appropriate institutional ethics committee before commencement of the study. Permission was also obtained from relevant community representatives within the selected wards.

Participation was voluntary, and respondents were informed about the purpose of the research before providing consent. No personal identifiers such as names or phone numbers were collected. Respondents were informed of their right to withdraw at any stage without penalty.

All collected information was treated confidentially and used strictly for academic purposes.

10 Data Analysis

Data were analysed using IBM Statistical Package for the Social Sciences (SPSS) version 26.

Descriptive statistics, including frequency counts, percentages, mean and standard deviation, were used to summarise demographic characteristics, urban environmental planning conditions and NCD-prevention practices.

Pearson Product Moment Correlation was used to determine the relationship between urban environmental planning dimensions and NCD prevention.

Multiple regression analysis was conducted to determine the combined and individual influence of urban environmental planning dimensions on NCD-prevention practices.

Statistical significance was tested at a 0.05 probability level.

Results

A total of 422 questionnaires were administered among adult residents of Abuja Municipal Area Council (AMAC). Of these, 411 questionnaires were retrieved, while eight were excluded due to incomplete responses. Therefore, 403 questionnaires were found suitable for analysis, representing a valid response rate of 95.5%.

1 Socio-Demographic Characteristics of Respondents

Table 1: Socio-Demographic Characteristics of Respondents (n = 403)

Variable	Category	Frequency	Percentage (%)
Sex	Male	202	50.1
	Female	201	49.9
Age	18–27 years	95	23.6
	28–37 years	131	32.5
	38–47 years	91	22.6
	48–57 years	54	13.4
	58 years and above	32	7.9
Marital status	Single	165	40.9
	Married	210	52.1
	Separated/Widowed	28	6.9
Education	Secondary school or below	77	19.1
	NCE/OND	104	25.8
	HND/Bachelor's degree	169	41.9
	Postgraduate qualification	53	13.2
Length of residence	6 months–5 years	125	31.0
	6–10 years	111	27.5
	11 years and above	167	41.4

Source: Field Survey, 2026

The demographic distribution showed that male respondents constituted 50.1%, while females represented 49.9%. The largest age category was 28–37 years (32.5%). More than half of the respondents were married (52.1%), while 41.9% possessed HND or bachelor's degree qualifications. A substantial proportion of respondents (41.4%) had lived within AMAC for more than 11 years.

2 Urban Environmental Planning Conditions

Table 2: Mean Ratings of Urban Environmental Planning Conditions

Urban environmental planning dimension	Mean	Standard deviation	Decision
Walkability and transport infrastructure	2.86	0.88	Moderate
Green spaces and recreation facilities	2.44	1.01	Low
Sanitation, drainage and waste management	2.69	0.91	Moderate
Air quality and pollution control	2.37	0.96	Low
Housing and neighbourhood conditions	2.72	0.86	Moderate
Healthy food environment	2.98	0.80	Moderate
Grand mean	2.68	0.54	Moderate

Source: Field Survey, 2026

The findings indicated that overall urban environmental planning conditions were rated moderate, with a grand mean score of 2.68. Healthy food-environment conditions recorded the highest mean score (2.98), followed by walkability and transport infrastructure (2.86). However, access to green spaces and recreational facilities (2.44) and air-quality and pollution-control conditions (2.37) received relatively lower ratings.

3 NCD-Prevention Practices among Respondents

Table 3: Mean Ratings of NCD-Prevention Practices

NCD prevention practice	Mean	Standard deviation	Decision
Regular participation in physical activity	2.79	0.95	Moderate
Healthy dietary practices	2.71	0.87	Moderate
Routine blood pressure and blood glucose screening	2.63	1.01	Moderate
Avoidance of environmental pollution exposure	2.49	0.93	Low
Awareness of NCD risk factors	3.18	0.82	High
Grand mean	2.76	0.57	Moderate

Source: Field Survey, 2026

Respondents demonstrated a moderate level of NCD-prevention practices, with a grand mean score of 2.76. Awareness of NCD risk factors recorded the highest mean score (3.18). However, avoidance of environmental pollution exposure had the lowest rating (2.49), suggesting difficulties in reducing exposure to urban pollutants.

4 Relationship between Urban Environmental Planning and NCD Prevention

Table 4: Correlation between Urban Environmental Planning Dimensions and NCD Prevention

Variable	Correlation coefficient (r)	p-value	Decision
Walkability and transport infrastructure	0.411	<0.001	Significant
Green spaces and recreational facilities	0.361	<0.001	Significant
Sanitation, drainage and waste management	0.286	<0.001	Significant
Air quality and pollution control	0.331	<0.001	Significant
Housing and neighbourhood conditions	0.253	<0.001	Significant
Healthy food environment	0.391	<0.001	Significant

Source: Field Survey, 2026

The correlation analysis revealed significant positive relationships between all examined urban environmental planning dimensions and NCD-prevention practices. Walkability and transport infrastructure showed the strongest relationship (r = 0.411), followed by healthy food-environment conditions (r = 0.391).

5. Influence of Urban Environmental Planning on NCD Prevention

Table 5: Multiple Regression Analysis of Urban Environmental Planning Dimensions and NCD Prevention

Predictor	Beta (β)	p-value	Decision
Walkability and transport infrastructure	0.205	<0.001	Significant
Green spaces and recreation facilities	0.160	0.001	Significant
Sanitation and waste management	0.102	0.036	Significant
Air quality and pollution control	0.143	0.004	Significant

Housing and neighbourhood conditions	0.062	0.205	Not significant
Healthy food environment	0.183	<0.001	Significant

Source: Field Survey, 2026

Model statistics:
$R = 0.598$
$R^2 = 0.358$
Adjusted $R^2 = 0.349$
$F(6,396) = 36.80$, $p < 0.001$

The regression model showed that urban environmental planning dimensions jointly explained 35.8% of the variation in NCD-prevention practices among respondents. Walkability and transport infrastructure emerged as the strongest predictor, followed by healthy food-environment conditions and access to green spaces.

Discussion of Findings

This study examined the influence of urban environmental planning on NCD prevention among residents of AMAC, Abuja. The findings demonstrated that urban planning conditions were significantly associated with residents' preventive practices, supporting the argument that health outcomes are shaped not only by individual decisions but also by the environments in which people live.

The moderate rating of urban environmental planning conditions suggests that Abuja possesses some supportive infrastructure for healthy living, although important limitations remain. The relatively low ratings for green-space availability and air-quality conditions indicate areas requiring attention. This finding aligns with Sharifi et al. (2024), who emphasised that green infrastructure contributes to cardiometabolic health when spaces are accessible, safe and usable.

The strong relationship between walkability and NCD prevention observed in this study reflects evidence from Zhang et al. (2024), who reported that pedestrian-friendly environments and accessible neighbourhood services encourage physical activity. In the context of Abuja, where dependence on motorised transport is common, improved pedestrian infrastructure may provide opportunities for incorporating physical activity into daily routines.

The influence of healthy food environments on NCD prevention also supports findings from Ugbede et al. (2025), who identified associations between frequent urban street-food consumption and hypertension and diabetes among adults in Nigerian cities. While food choices remain

individual decisions, the surrounding food environment can influence affordability, accessibility and availability of healthier alternatives.

The low rating for pollution avoidance indicates a challenge in urban health management. Residents may understand pollution risks but have limited control over exposure from traffic emissions, generator use, construction activities and waste burning. This highlights the need for environmental policies that reduce exposure at population level rather than relying only on individual behavioural change.

The regression findings further demonstrate that urban planning dimensions operate together rather than independently. The combined contribution of 35.8% indicates that improvements in transport systems, food environments, green spaces, sanitation and pollution control can collectively strengthen NCD prevention efforts.

Conclusion

This study established that urban environmental planning significantly influences non-communicable disease prevention among residents of Abuja Municipal Area Council. Although residents reported moderate urban planning conditions and preventive practices, important challenges remain, particularly regarding access to green spaces and exposure to environmental pollution.

The findings demonstrate that NCD prevention requires approaches that extend beyond healthcare services. Urban development decisions concerning mobility, environmental management, recreational spaces and food systems influence the conditions under which residents make health-related choices.

Integrating health considerations into urban planning processes can contribute to healthier communities and support long-term reduction of NCD risks in Abuja and other rapidly growing Nigerian cities.

Recommendations

Based on the findings, the study recommends that:

1. Urban planning authorities should expand and maintain accessible green spaces and recreational facilities across residential communities in Abuja.
2. Transport planning should prioritise pedestrian infrastructure, including safe walkways, crossings and improved connectivity between residential and commercial areas.
3. Environmental agencies should strengthen air-quality monitoring and pollution-control measures, particularly in high-traffic areas.

4. Municipal authorities should improve waste-management systems and drainage infrastructure to reduce environmental risks.
5. Food-environment policies should encourage healthier food availability while promoting safer and healthier practices among urban food vendors.
6. Public health agencies should collaborate with urban planners to integrate NCD prevention strategies into city development policies.

Conflict of Interest Statement

The authors declare that there is no conflict of interest associated with this study.

Funding Statement

This study received no external funding.

Ethical Approval

Ethical approval was obtained from the appropriate institutional ethics committee before commencement of the research. Participation was voluntary, and informed consent was obtained from all respondents before data collection.

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