ENVIRONMENTAL PERCEPTION OF QUALITY OF LIFE IN DOGARAWA, SABON-GARI LOCAL GOVERNMENT AREA, KADUNA STATE NIGERIA

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Abstract

Environment is the totality of all bio-physical, socioeconomic, cultural and policy surroundings of man. In rapidly changing rural-urban transitional settlements, wellbeing of the residents is linked to the provisioning and regulatory functions of the environment and where these are deficient; the quality of life is undermined. This paper addresses this theme in Dogarawa, though the headquarters of Sabon-gari local government area of Kaduna state yet a settlement in transition from rural to urban. Data were collected from 180 systematically selected households through a questionnaire survey. Data were analyzed with descriptive statistical techniques and multiple regression analysis to identify the environmental variables that explains quality of life. The key findings include that 172 of the sampled households depended on well some of which were unprotected, all the residents did not have access to modern waste disposal facilities and more than 87% of the sampled households suffer diseases of diverse causes. About 78% of the respondents perceived their quality of life as low compared to neighbourhoods like Sabon-gari central area and Zaria city with indicators such as burden of diseases and infection, insecurity of people and properties and exposure to environmental nuisance. Multiple regression result indicates that of the seven selected variables, four: X_1 (incidence of communicable diseases), X_7 (vulnerability to domestic armed-robbery attacks), X_5 (environmental nuisance) and X_3 (socioeconomic status-related diseases) have r^2 of 0.7458 indicating about 74.5% of the variance in low quality of life. Policy recommendations include advocacy planning on self-help efforts to fill the gaps in infrastructural deficiency by government, public awareness on the unrivalled need to adopt environmental sanitation efforts, and, utilization of some human-induced landscapes such as excavation pits for eco-supportive infrastructure in order to turn negative environmental phenomena to positive spatio-temporal uses. The conclusion is that various degrees of negative anthropogenic-environmental interaction of humans impact the ability of the environment to continuously support high quality of human life.

Key words: Environmental perception, quality of life, transitional rural settlements, Dogarawa, Sabon-gari LGA.

1. Introduction

Natural increase and migration are the two major processes of population increase that transform rural settlements to urban. The process of transformation then intensifies with complex change of socioeconomic milieu; organized housing structure in grid neighbourhood; provision of market; availability of formal occupation and wage employment from industries and civil service; complex life improving infrastructure; socio-spatial organization in transportation; complex and hierarchical political authority; and changed behavioural trait from traditional to modern are some evidences (Mabogunje 1980).At the climax, previous rural areas are transformed to urban settlements.

In between these two distinctive settlement categories are some in the spatio-temporal process of transition. Consequently, some attributes of rural and urban areas are observable in such landscape. Such settlements are referred to as either fringe settlements or rural-urban fringes (Mayhew 2009) or transition rural settlements. These milieus affect the quality of life domains of the inhabitants of such settlements and the overall socio-economic wellbeing (Millennium Ecosystem Assessment (MEA) 2006).

The pervasive influence of environmental phenomena on the overall development process is always a subject of geographical enquiry (Baba, 1994; Ofomata 2001; Adedayo 2006). Environment is defined by different authors such as (Botkin and Keller (1998); Conelly and Smith (1999); Eyo and Ogban (1999); Hughes (2001); United Nations System (UNS) (2001) and Aluko (2006) among others. Ololobu (1999) defined environment as a sum total of conditions which surrounds man and ensure survival. These various conceptualizations affect environmental perception of humans as abode of livability, security and human comfort..

As stated by Abler, Adams and Gould (1972), experiences are our perception of events. Whether an event appears to us to have occurred externally or internally, the knowledge of it as it impinges upon on our existence is the most imperative. Perceptual reality of humans can indeed be designative or appraisive (Cox,1972) depending on location and circumstances.

Quality of life is used to evaluate the general well-being of individuals and societies. Some indicators of quality of life include employment, wealth and income, the built environment, physical and mental health, education, recreation and leisure time, and social belonging. Quality of life is a desired outcome of environmental provision and development policies that guarantee access and consumption materials and services perceived to improve well-being. These vary from culture and society hence no watertight indicators of quality of life exist. As a result, researchers select indicators suitable for the socio-economic circumstances, cultural-environmental peculiarities and research objectives. Social geographers in rural and urban studies thus assemble previous quality of life indicators and adopt those suitable for their studies (Oyebanji 1984). Geographers and other researchers that have employed this approach include Knox and Coltam (1981); Oyebanji (1988); Adedayo (1988) and David-swain (2002). Nations also adopt different indicators (Borough of Macclesfield 2004),

Transitional rural settlements have their associated environmental conditions that affect the quality of life as well as the perception of the inhabitants. Investigating this aspect advances the course of human development as they enhance formulating and implementing actionable policies that will transform the people socio-economically while improving the environmental circumstances. Indeed, as emphasized by Abler, Adams and Gould (1972), humans as conscious and self-conscious beings must concern themselves with events in their environment and events within them as well as the relationships between the two. Available research evidences indicate that such perception issues have not been examined in Dogarawa which incidentally is the headquarters of Sabon Gari local government area (LGA). This research gap is filled with this paper. Quality of life has multiple indicators which no single paper can satisfactorily examine. The scope of this study is therefore limited to housing and the built environment, outdoor environmental nuisance, potable water and sanitary environment, and security. The objectives are to: (1) characterize housing type, pattern and factors determining the choice of residence; (2) examine the factors that account for quality of life in Dogarawa, and, (3) examine the interaction between environmental factors and quality of life among the residents.

2. Study area

Dogarawa is the politico-administrative headquarters of Sabon-gari LGA, though by far the least urbanized among the nine urban wards in the LGA. This, in addition to its spatio-location peculiarities and socio-economic attributes informs the classification as transitional rural albeit the claim that all local government headquarters in Nigeria are urban centres. Dogarawa, a previously obscured village, along the old Zaria-Kano expressway shot to prominence when Sabon-gari LGA was carved out of Soba LGA in 1991 and Dogarawa was made the headquarters (Personal Communication, Salihu Ungwa Nomi).

Dogarawa derived its name from the Hausa word *Dogari* which means traditional police or security guards. The origin dates back to the period when the present Zaria area was still under the Islamic authority of the Sokoto caliphate. Then, Shehu of Sokoto usually delegates one of his scholars to govern the people in communities under his domain. There was a footpath the appointed representative used to take on his way to be turbaned in Sokoto and a small hamlet serve as a resting place. Later, armed bandits began to attack the people passing the route and there were wild animals around the area which were threat to travelers as well. The need to check the bandits and prevent attack from wild life led to positioning the *Dogaris* at that settlement. The settlement derived its name (Dogarawa) there from and the head of the *Dogaris* was known as *Makama*. Not long afterwards Kabama village developed. This made Dogarawa to be under three traditional *Ungwa* authorities viz Sarkin Ungwa Dogarawa, Sarkin Kabama, and Sarkin Ungwa Makama (Personal Communication, Salihu Ungwa Nomi).

During colonialism and immediate post independent Nigeria, Dogarawa lost its prominence when Sabon Gari, Hanwa, Samaru and other urban settlements were established obscuring Dogarawa by size, socio-cultural and economic complexity. When Soba LGA was created, these settlements that were previously under Zaria LGA were moved to Soba LGA (Personal

Communication Kasumu Jasper). In September I991, when Sabon-Gari LGA was created, Dogarawa was chosen as the headquarters by virtue of its spatio-historical ascendancy but neither by population size nor socio-economic diversity. Dogarawa shares the same environmental conditions with other areas in Sabon-Gari LGA; hence it is discussed under this context.

Sabon Gari LGA is located approximately within latitude 10º 90' and 11º 30'N and longitudes 7º 50 and 7º 70 'E. The area falls within the northern Kaduna sub-region. According to the 2006 census, the population of the area is 286871 (Federal Republic of Nigeria, 2007) over 65% of which are rural dwellers. Socio-culturally, the indigenous people are Hausa by Language and culture. However, in Dogarawa there is ethno-cultural intermingling but Islam is the dominating religion with few Christians.

3. Materials and methods

Data obtained were from primary and secondary sources. The primary sources were questionnaires survey with sampled respondents while interviews were with opinion leaders and staff of the health facilities, and the Sabon-Gari LGA secretariat. Secondary sources were extracted to fill the gaps in primary data such as published and unpublished works.

Both quota and systematic sampling method were employed in this research. The quota sampling method was first used to delineate the study area into three different sections; A, B, and C according to the characteristics of the study area into Dogarawa, Ungwa Nomi/Nassarawa and Ungwa Makama. In each quota, two streets were sampled as equal representation of the population. Systematic sampling was then employed in choosing respondents based on households to ensure spatial coverage. Accordingly, every third house was selected and the most elderly and matured member of the household available at the time of survey was requested to answer the questionnaire. On each street, 30 questionnaires were equally administered to give a total of 180 questionnaires.

Data were analyzed through descriptive and inferential statistics. The descriptive statistics used were frequency tables, percentages, and charts to summarize socio-economic data of respondents and quality of life and environmental variables. Multiple regression analysis (MRA) was employed to identify environmental indicators of quality of life. This multivariate analytical technique was employed because of its robustness and strength of isolating statistically significant factors responsible for observable variation from an assemblage of variables. This study employed Statistical Package for Social Sciences (SPSS).

4. Analysis and discussion of findings

4.1 Socio-Economic Characteristics of Respondents

From the data, about 92.8% of the respondents were males while less than 7.2 were females. This was due to the socio-cultural background of the study area, which is Muslim

dominated. The educational attainment of respondents reflects the rural-urban characteristics of the study area where 20% and 43.9% of respondents were primary school and Islamic school graduates respectively. These were mostly in the traditional sectors of Dogarawa. Another 18.9% respondents had secondary school certificate while 5% of the sampled house hold heads had acquired tertiary education.

Majority of the respondents were not so young. For instance 37% of the respondents in the traditional areas of Dogarawa were between 50-59 years while respondents in that age category in Ungwa Nomi were 19 %. About 24% of respondents were between 40-49 years while only 20% were below 39 years. Only 1.7% of respondents were single and about 85% were in marital union; (monogyny, 37% and polygyny, 48%). The marital characteristics reveal that Dogarawa is just emerging from a traditional rural setting where many wives with high fertility rate give birth to many children to help in farming activities.

Occupational characteristics reveal that about 10% of respondents were civil / public servants working in the local government secretariat, police and military forces, and educational institutions while 15 % were either business men or women. Artisans were less than 10% while more than 66% of respondents claimed to combine farming and other off-farm activities like transportation (vehicle and motorcycle), bricklaying and masonry, tailoring and so on. Besides, farming is still prominent among the residents particularly in traditional areas like Bagadasa, Kwantaresha and the inner part of Dogarawa.

4.2 Residential and housing condition in Dogarawa

Factors responsible for choice of place of residence are the "pull" factors especially if such locations are not seriously urbanized. Table 1 presents these with respect to the Dogarawa.

Table 1: Reasons for residential choice in Dogarawa

S/No.	Primary/major factor	Frequency	%
1.	Headquarters Status	37	20.6
2.	Cheap land/ rent	33	18.3
3.	Infrastructure (electricity)	38	21.1
4.	Nativity	57	31.7
5.	Non congestion and serenity.	15	8.3
	Total	180	100

Source: Author.

Table 1 shows that about 20% of the respondents claimed to reside in Dogarawa because being the head-quarters, basic amenities will supposedly be provided and more than 18% were attracted by the cheapness of the land. For example, a respondent claimed that in 2007 he bought about half plot of land for 240,000.00Naira** in Ungwa Nomi area of Dogarawa while the same size of land in Hayin Dogo area (Samaru) sold for about 500,000.00 Naira. Another 21.1% claimed that electricity was the major attraction in 2006 when the Kwantaresha electricity project was just concluded and the residents enjoyed fairly better power supply than other locations in Sabon-Gari LGA. About 20% responded claimed that their houses were between 1-5 years old,

25.6% of the houses were between 6-10 years another 21.1% claimed their houses were aged between 11-15 years and houses for about 33.3% of the were above 15 years.
** 1 US Dollar is equivalent to 160 Naira as at the time of survey.

Based on this result, many houses, sand-brick made were more than 15 years old particularly in the traditional areas of Dogarawa as such the houses are considerably old and dilapidated. However in the newly occupied section of Ungwa Nomi/Nassarawa, the houses are less than ten years. The implication of this is variable quality of life quality because many of the old houses were also without modern facilities compared to the newer ones.

4.3 Environment and Quality of Life in Dogarawa

The level of perception of satisfaction with quality of life among residents in any area is linked to environmental provisioning. Views on the issues that could be used to classify quality of life of respondents include water supply, waste management, health and disease burdens as well as serenity of the place. These issues were analyzed in succeeding sub-sections.

4.3.1 Water supply to respondents
About 4.4% of the respondents used public boreholes and wells as their sources of domestic water supply 58.9.1% relied on wells dug in their homes. Water supply in Dogarawa is a problem though but has not reached a crisis stage. The landlords thus dig wells for their households. Households that cannot dig their well (17.8%) relied on neighbours for water supply. About 18.9 % of the respondents also depended on wells and water vendors (*Mai- ruwa*) especially during the peak of dry season.

4.3.2 .Waste management and environmental health in Dogarawa
Waste management takes a variety of forms. Some can be considered environmentally friendly or otherwise. Generally, 62.2% of respondents usually dump domestic waste in excavation pits and drainage channels while more than 33% burn their refuse. Only 1.7% dispose waste through scavengers and 2.2% bury their refuse. The residents obviously lack access to environmentally-healthy waste disposal infrastructure, hence the use of unconventional means.

4.3.3 Environmental Health and Disease Burden in Dogarawa
There is an intricate link between environmental health and quality of life. If the environment is save from pathogenic organisms, communicable diseases will not be burden. The finding indicates that about 45% claimed that the major household disease burden was malaria fever while 19.4% claimed that typhoid fever was the commonest. The least reported case was scabies and skin infections by 7.2% while respiratory infections were the commonest among 12.3% of respondents. It can be deduced that the residents of Dogarawa suffer various ailments that are both environment- as well as low socio-economic status-related because they are mostly infectious diseases.

The type and choice of toilet facilities is based on housing types, preference and cost. Toilet facilities available to 62.8% households were pit latrine, while only 28.3% households use flush toilet or water closets. Open space was option for 6.7% households used while less than 3% households defecate on refuse dumps. Generally, toilet facilities of many respondents were inadequate and the methods adopted constitute environment harm to other residents of the area.

4.3.4 *Environmental indicators of quality of life*

Multiple regression analysis was employed to identify the environmental determinants of quality of life. The factors were arrived at after a rigorous examination of the research objectives and the peculiarity of the environment under investigation. For the multiple regression analysis, the factors hypothesized as quality of life indicators were $X_1 - X_7$. Where,

Y = Dissatisfaction with level of living as quality of life indicator,

X_1 =Per cent population affected by communicable diseases

X_2 =Per cent population living in houses older 25 years

X_3 =Per cent population that suffer from socioeconomic status-related diseases

X_4 = Per cent population with below 50years of life expectancy

X_5 = Per cent population exposed to environmental nuisance

X_6 = Per cent population exposed to intolerable noise

X_7 = Per cent population that suffer domestic armed-robbery attack in the last 6 months

The step wise multiple regression method isolates four major factors as indicators of quality of life. These four explanatory variables that enter into the model at 0.5% significant level are X_1, X_7, X_5, and X_3 (Table 2). As revealed in table 2, the variables that explain quality of life are X_1 (population affected by communicable diseases), X_7 (population exposed insecurity of lives and properties), X_5 (population exposed to environmental nuisance), and X_4 (socioeconomic status-related diseases).All the variables have r^2 of 0.7458 indicating about 74.5% of the variation in low quality of life. Several findings can be inferred from the multiple regression analysis result. Firstly, variable X_1 (population affected by communicable diseases) undoubtedly is the most important indicator. It has r^2 of 0.2704 and a contribution of about 27.0% to the total variance. These variables reflect the poor state of environmental health typical of a rapidly expanding rural-urban fringe. Environment is expected to regulate diseases and infection but when this capacity is overwhelmed, human health is compromised (MEA, 2006).

Table 2: Multiple Regression Analysis Result.

Variables	Parameter Est.	Standard Error	R	r 2	Coefficient of determination %
Intercept	-3.07	1.245		-	
X_1 (Communicable diseases)	6.21	2.34	.52	0.2704	27.0%
X_7 (Insecurity of lives)	3.04	1.25	.47	0.2209	22.1%
X_5 (Environmental nuisance)	1.03	3.92	.39	0.1521	15.2%
X_3(Social status-related diseases)	-2.61	1.00	.32	0.1024	10.2%
Total				0.7458	74.5%

Source: Author

For illustration, most of the area is not properly or legally lain out as different individuals purchase their plots of land and erect their structures almost haphazardly hence, drainage channels are not constructed on many streets. Besides, there are excavation pits, where earth materials for constructing local mud houses have been removed forming stagnant pools thus serving as breeding grounds for disease vectors like houseflies and mosquito (Fig. 4). The health situation is made worse by unpardonable absence of health infrastructure. As at the time of survey (December, 2011 and June, 2012), only one poorly equipped public health centre was available (Fig. 5) and private medical facilities were also absent.

Apart from outdoor environment, water is a basic needs and its accessibility influences the quality of life. Majority of the respondents lack access to pipe-borne water. Many households were not connected to the municipal (Zaria) water works, the public wells were unprotected and the available public boreholes were malfunctioning (Figs. 1 and 2). Consequently, only the financially buoyant residents dig wells and boreholes in their private homes. As at the time of survey, the cost of digging a well was N50,000.00 while the cost of a bore hole ranged between N200,000–N350,000.00. Apart from cost, availability of water is seasonal; all the respondents face water scarcity during the dry season, a shortcoming of the provisioning role of the environment. This inaccessibility to water heightens the low quality of life of people (Oyebanji, 1988; Adedayo and Fabiyi, 1999; UNS, 2001)

Variable X_7 (population exposed to insecurity of lives and properties) with a contribution of about 22.1% is the second significant variable. Many residents of Ungwa Makama, Nomi and Nassarawa suffered armed robbery attack at night as well as burglar infiltration of their homes. These resulted in permanent bodily injuries and loss of personal effects worth thousands of Naira. This insecurity is attributed to absence of organized crime prevention and security management services in the area. Despite being the headquarters, Dogarawa does not have a police post.

Population exposed to environmental nuisance from waste (X_5) is the next important environmental indicator of quality of life in the study area. Dogarawa despite being the Sabon-Gari LGA headquarters has no modern waste disposal infrastructure not even roll-in roll-out bins. The residents dump refuse in unbecoming places like drainage channels and excavation pits while the rest openly burn their waste or leave it to rot. Also many residents keep cattle whose dung litter the street as they move in the neighbourhoods.

Finally, population suffering from socioeconomic status related diseases (Variable X_4) is another variable with a high 10.2% additional explanation. This explains the polluted indoors air quality and poor sanitation. People without indoor toilet defecate in open space, uncompleted buildings and bush paths that compromise environmental aesthetic and health. In these areas, diseases vectors and pathogens probably contaminate edible food and refreshments such as fried cowpea meal (*Kose*) soybean cake *(Awara)*, bread, grilled/seasoned meat (*Suya* or *Tsire,*) and other unprotected but ready to eat food items. Besides, inadequate drainage system due to poor planning make many houses to allow their bathroom and kitchen effluent to flow onto the street (Fig. 6). This adds to burden of diseases such as *Gardiasis, Amoebiasis, Ascariasis*, and Hookworm (Omudu, 2003).

A holistic appraisal of environmental perception reveals that Dogarawa mirrors a typical Nigerian rural area in transition which is an appraisive perception of about 78% of respondents (see Cox, 1972). Their perception of quality of life is low compared to expectation of a local government headquarters which is supposedly a central place for adjacent settlements. Although only four variables have statistically significant contributions as predictors of quality of life, it does not preclude other factors. For example noise constitute environmental/ health nuisance to humans while life expectancy is supposedly a good measure of quality of life. However, the co-efficient of these other variables is too low to offer any meaningful explanation to quality of life in Dogarawa.

The regression equation could thus be written as $Y = -3.07 + 6.21 X_1 + 3.04 X_7 + 1.03 X_5 + -2.61 X_3 + 1.245$. Other possible factors not included in the current variable may include outdoor air pollution, soil degradation and erosion, dampness of house among others.

5. Conclusion.

The foregoing analysis reveals the low quality of life suffered by residents of a typical rural-urban fringe in a Nigerian setting. The people are exposed to a variety of environmental constraints such as poor sanitation typified by improper waste disposal infrastructure and toilet facilities. This is coupled with absence of efficient and actionable policies to provide hospitals and potable (pipe-borne water) for the people. As a predictive model, the MRA reveals that in any transitional rural settlements where environmental indicators similar to the present study are operational, quality of life of the residents often leave much to be desired.

Some policy implications can be proffered towards improving the quality of life among the residents. These relate to both the physical and policy environment.

Firstly, there is a need for positive discrimination in provision of infrastructure in Dogarawa. This is not only because it is the administrative headquarters of the local government council but also that the residents deserve a quality of life befitting human beings. The local government council should embark on provision of sustainable potable water to the residents by facilitating the connection of pipes to the Zaria water works. These recommendations are for the purpose of satisfying various developmental goals on social well-being that improves quality of life and the environment. Waste management should also be improved.

Policy makers should be committed improving quality of life of the people while local government authority should implement policies that address the peculiar environmental challenges of the area. For example, all the excavation pits can be harnessed for eco-system supportive (eco-supportive) infrastructure especially rain-water harvesting instead of serving as breeding grounds for disease pathogens.

Dogarawa is fast becoming a heterogeneous community hence, the need to encourage self-help activities among the residents. It was observed that as at June, 2012 residents of Ungwa Nassarawa successfully employed Vigilante Corps for security and the Ungwa Nomi Neighbourhood Association made serious progress to initiate community policing. Since government appears incapable of providing the infrastructure requisite for improved quality of life, with self-help, infrastructure projects and services can be provided by pooling financial resources to provide infrastructure such as potable water, waste management facilities and even community health centres and dispensaries

Fig. 1: Unprotected/ Open well used by several households on Kabiru Maigoro road, Ungwa Nomi Dogarawa

Fig. 2: A non-working borehole on Kwara road, Dogarawa

Fig. 3: An excavation pit used as refuse dumpsite on Makama Road, Ungwa Nomi,Dogarawa

Fig. 4 : An excavation pit to which several households link their bathroom/toilets and empty their waste in Ungwa Makama, Dogarawa

Fig. 5. The only public Health post in Dogarawa adjacent to the UBE primary school in Dogarawa

Fig. 6: A house where the domestic waste and bath effluent to flow on to the street in Dogarawa

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