



The relationship between urban-dwelling older adults' satisfaction with environmental quality of life and self-rated health in a Nigerian setting

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Abstract

The objective of the investigation was to ascertain the relationship between satisfaction with environmental quality of life (EnQoL) and self-rated health (SRH) among urban-dwelling Nigeria's older adults. EnQoL domains investigated were health facilities, utilities (water supply, sewage and refuse disposal), recreation facilities, security, transport and housing. Structured questionnaire containing scales for EnQoL and SRH were used to obtain information from 704 older adults (50-80+ years) in four major towns of Delta State, Nigeria. Prevalence of non-satisfaction with EnQoL and poor SRH was 60.4 and 47.1%, respectively. Prevalence of satisfaction with EnQoL domains of health facilities, utilities, recreation and security were low (9.6-27.0%) while it was highest with transport (65.5%). Marked socio-demographic variations were observed with SRH, but not with EnQoL. Satisfaction with EnQoL correlated with SRH (r_s , 0.33; $P < 0.05$) by overall assessment, but was limited to gender, age, occupation and economic status (r_s , 0.30-0.46; $P < 0.01-0.05$) by socio-demographic analysis. Satisfaction with all but security and recreation domains of EnQoL, were related to good SRH (OR, 2.10-2.66; $P = 0.000$). It can be concluded that environmental services can promote healthy ageing in urban areas of Nigeria if developed and sustained by appropriate government agencies.

Keywords: Health, Public utilities, Housing, Urbanization, Older adults, Quality of life

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1. Introduction

It is known that nearly 50% of the world population lives in cities (Montgomery et al., 2003). These cities face challenges of health, water and sanitary services for its teeming populations, which must be overcome for survival (Bugliarello, 2006). It is particularly challenging in low-income countries and especially in sub-Saharan Africa where urban growth rate has been estimated to be one of the fastest in the world (UNDP, 1997; UNEP 1999; UNCHS, 2002). Urbanization trends in sub-Saharan Africa has not been matched with needed health and environmental services hence the numerous cases of water-borne infections and chronic diseases (Boadi, 2005). These environmental services constitute the domains of the environmental quality of life. Poor environmental quality of life is therefore, likely to affect health. This may be worse for older adults whose physiological functions decline with advancing age. In the words of Hunter et al. (2011) "A growing body of research points to the influence of social, physical and built environments on older adult health. To date environmental policy that supports healthy ageing and helps prevent or delay functional decline and disability has been limited".

Environment has been defined as "all the physical, chemical and biological factors external to a person as it relates to health" by WHO (2006). Thus environment is a major contributory factor to quality of life. Environmental Campaigns Limited (ENCAMS) defined quality of life as "the environmental, economic and social factors that affect how people feel about themselves and the place in which they live" (Campbell et al., 2007). This definition is attractive for environmental quality of life because of the inclusion of the phrase "the place in which they live". The "place" includes neighbourhood layout and friendliness, housing, health facilities, recreation, congestion, security and public utilities (sewage, water supply, refuse dump sites). All these constitute the domains of environmental quality of life (Jeffres and Dobos, 1995; Møller, 2001; Westaway, 2006) that challenge city planners. These services have been reported to be poor in many low- and middle-income countries (Boadi et al., 2005; Cohen, 2006).

Studies in environmental quality of life (EnQoL) in Nigeria and sub-Saharan Africa have been limited to sanitation, housing, transport and neighborhood, and rarely embrace other aspects of EnQoL (Boadi et al., 2005; SEI, 2013; Olotua, 2010; Eni and Abua, 2014; Amao, 2012; 2014; Daramola and Ibem, 2010). Besides, these studies were not considered from the perspectives of its impact on the elderly. Studies on ageing in Nigeria and other sub-Saharan African countries tended to concentrate on health problems of retirees, diabetes, depression, physical disability, cardiovascular problems and caregiving (e.g. Abduraheem et al., 2011; Adebawale et al., 2012; Akinyemi and Aransiola, 2010; Alawode and Lawal, 2014; Debpuur et al., 2010; Eboiyeni, 2006; Ejechi, 2012; Gureje, et al., 2006; Gureje et al., 2007; Gureje et al., 2008; Mwanvangala et al., 2010; Nawi et al., 2010). Studies on the linkage between domains of environmental quality of life and health outcomes or self-rated health of the elderly in Nigeria or sub-Saharan Africa are difficult to come by.

The demographic profile of Nigeria shows that older adults (>55 years) constitute 7% of an estimated population of 177,155,754 million with a median age of 18.2 years and life expectancy of 52.6 years (Index Mundi, 2015). Disability among the aged people tend to be substantial with the crude disability rate per 1000 being 8.7, 11 and 24.1 for adults aged 60-64, 65-84 and 85+ years, respectively (National Population Commission, 2003). The population of older adults will increase with time and their health is likely to be of

major concern if appropriate health care programmes for the elderly are not in place. The association between self-rated health and EnQoL will therefore be of interest as a prelude to corrective measures.

Self-rated health (SRH) has been shown to be associated with morbidity and mortality (Idler and Benjamini, 1997; Ferraro & Kelley-More, 2001; Wolinsky et al., 2008) hence it is important to know the relationship between EnQoL and SRH. There is paucity of information on the association between EnQoL and SRH of older adults. The few available researches tend to focus on neighbourhood environment which does not encompass all the domains of EnQoL. Besides research on neighbourhood environment tended more towards association with engagement in physical activity than SRH (e.g Bolivar et al., 2010; Ding et al., 2011; Giehl et al., 2012; Oyeyemi et al., 2012; Solomon et al., 2013; Moran et al., 2014). However, the report by Cummings et al., (2005) was on the association between neighbourhood environment and SRH in Scotland and Wales, but was not specific for older adults. Another more recent report by Yan (2013) focused on older adults SRH and neighbourhood environment, but not on EnQoL *per se*.

Many elderly Nigerians especially retirees remain in the urban areas to continue life after work thereby facing the challenges of urbanization with attendant health consequences. This investigation was therefore aimed at determining older adults' satisfaction with EnQoL, SRH and their relationship in Nigerian urban settings. The information may be useful in formulating policies that can promote and sustain healthy ageing.

2. Method

2.1. Data source

Structured questionnaire with sections on socio-demographic background, environmental quality of life (EnQoL) domains and self-rated health (SRH) was used to obtain information from elderly Nigerians aged 50-80+ years in five major towns in Delta State, Nigeria. Delta State is located in the oil-rich Niger Delta region of Nigeria. The economy of the state depends mostly on oil production, refining and distribution activities. Three of the selected towns (Warri, Sapele, Ughelli) are located in the heartland of oil exploration activities while the other two selected towns, Asaba the state capital and Agbor are about 90-120 km away from the centre of oil-producing areas. The economic impact of oil-related activity is also felt in the two towns. Delta State towns were considered good urban settings for the study because it is expected that the State's high economic profile would have positive impact on environmental services and health care. It will also be a test of Governments commitment to environmental and health services when fund is available.

The questionnaires (1000) were distributed at 200/town and 704 were returned with all the questions duly answered. Although it was designed to be a self-completion questionnaire, respondents with poor vision or required interpretation were assisted by research assistants. Respondents that required assistance gave oral permission before the questionnaires were administered. The socio-demographic variables considered were, age, gender, education, living with or without spouse, occupation and self-rated economic status. Self-rated economic status was used in place of graded income levels because the needs of people vary and may be influenced by religious or cultural background. Thus a specific income may be considered satisfactory to

one person but not to the other and vice-versa. The EnQoL domains were health facilities, public utilities (water supplies, sewage and refuse disposal), security, recreation, transport and housing.

2.2. Measures

Satisfaction with EnQoL domains was assessed by the procedure of Jeffres & Dobos (1995) and Westaway (2006). Respondents were requested to rate their satisfaction with EnQoL domains on a scale of 10: 1 (very dissatisfied) to 10 (very satisfied). The points from each of the domains were summed up to give the overall EnQoL score. The maximum available points stood at 60 based on 10/domain. SRH was measured with the routinely used single item 5-point scale. Respondents were requested to rate their health as: poor, 1; fair, 2; good, 3; very good, 4; or excellent, 5.

2.3. Data analyses

Individual respondent's EnQoL was classified as either not satisfactory or satisfactory based on scores below or above 30 points (50% of maximum points), respectively. Prevalence was subsequently computed by summing up the number of respondents in each class and converting to percentages of the overall sample population. Prevalence was also similarly ascertained by socio-demographic variables and for each of the EnQoL domains. The relationship between the overall satisfaction with EnQoL and SRH and between satisfaction with EnQoL domains and SRH were analysed with Spearman's correlation statistics and logistic regression, respectively.

3. Results

The population distribution by socio-demographic characteristics is presented in Table 1. The difference between male and female populations was marginal while respondents living with spouse were almost twice the population of those without spouse. The number of respondents declined with advancing age and those with secondary education dominated the sample. Table 1 also shows that self-employed respondents and public service employees were more than other categories of work while unemployed respondents were the least. Respondents satisfied with their economic status were nearly 20% less than their unsatisfied counterparts (Table 1).

Prevalence of poor SRH and non-satisfaction with EnQoL was slightly below and markedly above 50%, respectively by overall assessment (Table 2). The differences in the prevalence rates of satisfaction with EnQoL within each of the socio-demographic variables tended to be marginal except with economic status variable where it was high (Table 2). With respect to SRH, marked differences in prevalence rates occurred within all socio-demographic variables except education (Table 2). Lower prevalence of SRH tended to occur with males, younger age groups, living with spouse, self-employed, private sector employee or being satisfied with economic conditions (Table 2). By overall assessment, satisfaction with transport and housing domains

of EnQoL was markedly more prevalent than with health facilities, utilities, recreation facilities and security domains (Figure 1).

Table 1. Socio-demographic characteristics of respondents

| Variables | Respondents | |
|-----------------------------------|-------------|------|
| | N=704 | % |
| Gender | | |
| Male | 344 | 48.9 |
| Female | 360 | 51.1 |
| Age | | |
| 50-59 | 250 | 35.5 |
| 60-69 | 215 | 30.5 |
| 70-79 | 144 | 20.5 |
| 80+ | 95 | 13.5 |
| Marital Status | | |
| Living with spouse | 432 | 61.4 |
| Living without spouse | 272 | 38.6 |
| Education | | |
| None | 98 | 13.9 |
| Primary | 154 | 21.9 |
| Secondary | 300 | 42.6 |
| Tertiary | 152 | 21.6 |
| Occupation | | |
| Public Service | 206 | 29.3 |
| Private sector | 96 | 13.6 |
| Self-employed | 195 | 27.7 |
| Retiree | 117 | 16.6 |
| None | 90 | 12.8 |
| Self-rated economic status | | |
| Satisfactory | 183 | 26.0 |
| Not satisfactory | 521 | 74.0 |

Significant positive correlation occurred between overall satisfaction with EnQoL and SRH when all respondents were taken into account (Table 3). However when socio-demographic characteristics were taken into account, significant correlations between EnQoL and SRH occurred only among respondents that are males, females, 60-69 age group, public service employees, retirees, without job or with satisfactory economic status (Table 3). The correlations involving female and public service employee respondents were

the strongest as shown by the coefficient values and the significance levels (Table 3). The results of the logistic regression analysis presented in Table 4 show that satisfaction with all EnQoL domains except recreation and security were significantly related to good SRH (Table 4).

Table 2. Prevalence rate of satisfaction with overall environmental quality of life (EnQoL) and self-rated health (SRH) by socio-demographic characteristics

| Variables | N | Self-rated health (SRH) Environmental Quality of Life (EnQoL) | | | |
|-----------------------------------|-----|---|----------|---------------------------------------|---------------|
| | | Self-rated health (SRH) | | Environmental Quality of Life (EnQoL) | |
| | | Poor (%) | Good (%) | Not Satisfied (%) | Satisfied (%) |
| All respondents | 704 | 47.1 | 52.9 | 60.4 | 39.6 |
| Gender | | | | | |
| Male | 344 | 33.4 | 66.6 | 56.7 | 43.3 |
| Female | 360 | 56.1 | 43.9 | 62.2 | 37.8 |
| Age | | | | | |
| 50-59 | 250 | 40.6 | 59.4 | 60.8 | 39.2 |
| 60-69 | 215 | 47.4 | 52.6 | 61.4 | 38.6 |
| 70-79 | 144 | 58.8 | 41.2 | 56.2 | 43.8 |
| 80+ | 95 | 63.2 | 36.8 | 58.9 | 41.1 |
| Marital Status | | | | | |
| Living with spouse | 432 | 48.8 | 51.2 | 58.1 | 41.9 |
| Living without spouse | 272 | 59.6 | 40.4 | 63.6 | 36.4 |
| Education | | | | | |
| None | 98 | 51.0 | 49.0 | 69.4 | 30.6 |
| Primary | 154 | 50.6 | 49.4 | 71.4 | 28.6 |
| Secondary | 300 | 48.0 | 52.0 | 65.3 | 34.7 |
| Tertiary | 152 | 43.4 | 56.6 | 63.8 | 36.2 |
| Occupation | | | | | |
| Public Service | 206 | 63.6 | 46.4 | 70.1 | 29.1 |
| Private sector | 96 | 36.5 | 63.5 | 64.6 | 35.4 |
| Self-employed | 195 | 41.5 | 58.5 | 63.1 | 36.9 |
| Retiree | 117 | 65.5 | 34.2 | 51.3 | 48.7 |
| None | 90 | 64.4 | 35.6 | 57.8 | 42.2 |
| Self-rated economic status | | | | | |
| Satisfactory | 183 | 31.4 | 68.6 | 43.6 | 56.4 |
| Not satisfactory | 521 | 62.0 | 38.0 | 71.2 | 28.8 |

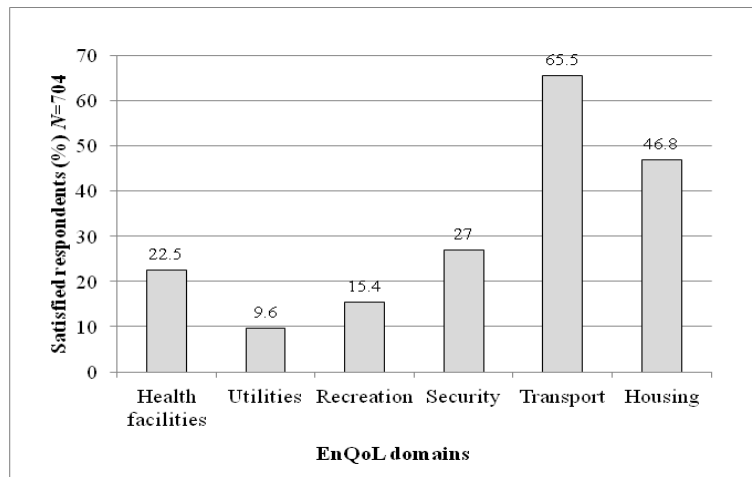


Figure 1. Prevalence of satisfaction with domains of EnQoL

Table 3. Correlation analyses of the relationship between SRH and overall EnQoL by socio-demographic variables

| Variables | Spearman correlation coefficient (r_s) |
|------------------------|--|
| All respondents | 0.33* |
| Gender | |
| Male | 0.32* |
| Female | 0.46** |
| Age | |
| 50-59 | 0.37 |
| 60-69 | 0.30* |
| 70-79 | 0.19 |
| 80+ | 0.11 |
| Marital Status | |
| Living with spouse | 0.23 |
| Without spouse | 0.21 |
| Education | |
| None | 0.18 |
| Primary | 0.23 |
| Secondary | 0.21 |
| Tertiary | 0.25 |
| Occupation | |
| Public Service | 0.41** |
| Private sector | 0.24 |
| Self-employed | 0.22 |
| Retiree | 0.34* |
| None | 0.35* |
| Economic status | |
| Satisfactory | 0.33* |
| Not satisfactory | 0.20 |

* $P < 0.05$; ** $P < 0.01$

Table 4. Logistic regression analyses of the relationship between satisfaction with EnQoL domains and good SRH

| Domains | | Odds Ratio | 95% C.L. |
|-------------------|---------------|------------|-----------|
| Health facilities | Not satisfied | 1 | |
| | Satisfied | 2.66* | 2.10-3.37 |
| Utilities | Not satisfied | 1 | |
| | Satisfied | 2.64* | 2.03-3.43 |
| Recreation | Not satisfied | 1 | |
| | Satisfied | 0.78 | 0.43-1.47 |
| Security | Not satisfied | 1 | |
| | Satisfied | 1.60 | 1.29-2.00 |
| Transport | Not satisfied | 1 | |
| | Satisfied | 2.10* | 1.5-2.93 |
| Housing | Not satisfied | 1 | |
| | Satisfied | 2.53* | 2.05-3.13 |

* $P=0.000$

4. Discussion

The findings showed that by overall assessment, poor self-rated health and non-satisfaction with environmental quality of life had substantial high prevalence among older adults in the urban settings investigated. The poor rating of environmental services by respondents did not come as a surprise, because studies have shown that the services are inadequate and often poorly executed in low income countries (Boardi et al., 2005; Cohen, 2006; Ejechi and Ejechi, 2008; Olotua, 2010; Amao, 2012). The reason for the inadequate and poor services is that the increasing population of urban residents in sub-Saharan Africa is not matched by a corresponding increase in service delivery. Indeed sub-Saharan Africa is reputed to have one of the fastest growth rates in the world (UNCHS, 2002; UNDP, 1997; UNEP 1999). The effect of the growth rate is that the cities become characterized by squatter camps, slums and unplanned residential areas (Boadi et al., 2005; Amao, 2012).

The prevalence of poor self-rated health among the older adults tended to reflect their ratings of the environmental services especially health facilities and public utilities (water, sewage and refuse disposal). It is common knowledge that poor sewage and refuse disposal systems enable vectors of malaria and other

parasitic diseases to thrive. Communicable diseases are also likely to be easily transmitted in overcrowded residential areas that are littered with refuse dumps and poor drainage systems as was observed in some Nigerian towns (Daramola and Ibem, 2010; Amao, 2014). Given this environment scenario, the substantial high prevalence of poor self-rated health among the older adult respondents cannot be surprising. The finding that the overall EnQoL correlated with self-rated health indicated the existence of a relationship between environmental services and the health of older adults. This finding is consistent with the report of Hunter et al., (2011) that evidence indicating the influence of built environment on the health of elderly people is mounting. The observation from the logistic regression analyses further substantiates the existence of a relationship.

The influence of socio-demographic factors was not substantial in respondents' rating of their environment except those with satisfactory economic status whose population was less than 30% of the sample size. The inference is that delivery of adequate or inadequate and good or poor environmental services tended not to be influenced by socio-economic class. The absence of significant correlations between satisfaction with EnQoL and SRH in some of the socio-demographic variables tends to substantiate this observation. The high rating given to EnQoL by a much lower population of respondents with satisfactory economic status may be attributed to their financial strength, because they can afford private bore-holes for regular water supply, purchase electricity generation sets and use private services for refuse disposal. This was physically observed in some residence during administration of the questionnaires. The socio-demographic variations observed with SRH is not new because several reports have shown that ageing, gender, education, occupation and income are associated with self-rated health (Ferraro and Kelley-More, 2001; Depbuur et al., 2010; Cramm and Nieboer, 2011; Dermichyan et al., 2012; Alawode and Lawal, 2014). The absence of marked socio-demographic variations with respect to satisfaction with EnQoL therefore, suggests that it is just one in the interplay of factors that influence self-rated health. However this does not reduce the importance of environment in the health of older adults who live in areas with poor sanitation and inadequate water supplies, because the protective human physiological functions (immune system) that resist infections, decline with advancing age.

The predictable relationship between satisfaction with EnQoL and SRH did not cut across all the EnQoL domains. Recreation domain of EnQoL is a leisure-related activity that was not significantly associated with SRH. Leisure-related physical activity is poor and not taken seriously in many African countries including Nigeria (Guthold et al., 2011) hence it is not likely to be associated with good SRH. The effect of security on health tends to be indirect because security concerns can limit health promoting outdoor activities such as leisure and social engagement (Shibata et al., 2009; Ding et al., 2011; Oyeyemi et al., 2012). Thus a predictable association between security and SRH may not necessarily occur.

Satisfaction with health facilities and public utilities was found to be more strongly related to SRH than other EnQoL domains. This can be attributed to the fast pace of urbanisation which has overstretched health and public utilities to breaking points in sub-Sahara Africa (Boadi et al., 2005; Cohen, 2006; Daramola and Ibem, 2010). The report by Welcome (2011) showed that health care system in Nigeria is poor and grossly inadequate for the population. The poor rating of the health facilities by older adult respondents in this study therefore suggests that access to health facilities is yet to improve. The ratings further indicated inadequate

water supply, and poor sewage and refuse disposals, which predispose people to diseases. The impact is likely to be more on older adults, because of declining resistance to diseases due to ageing.

The health of elderly people is also a reflection of the policy or care provided by Government. There is no social security, welfare, housing or health scheme for the aged in Nigeria (Shofoyeke and Amosun, 2014). Indeed many sub-Saharan African countries also do not provide social and financial security and health care for their aged people except South Africa, Botswana, Mauritius and Seychelles (Aboderin, 2007; Kpessa, 2010). These countries provide pension income for all older adults above a specified age irrespective of previous engagement in formal or informal sector of the economy. On the other hand the pension schemes of countries like Nigeria, Ghana, Kenya Uganda and The Gambia cover only the formal sector (including organized private sector) and this constitutes less than 3.0% of elderly people (Kpessa, 2010). Those from the informal sector rely on children or the traditional African extended family system in their old age and this is now under pressure due to unemployment problems (Kpessa, 2010). Unlike high-income countries where old people's homes or Community Care Centres are readily available for the aged, such centres are rare in Nigeria. For example Eze (2013) reported that only 13 Government and church sponsored old people's homes are available in Nigeria. Thus the poor rating of the environment and the association with poor health as the results revealed is also a reflection the absence of social, financial and health security for many elderly people.

A limitation of the study is that physical assessment of some of the environmental services (water supply, refuse and sewage disposal, recreational facilities) was not undertaken to corroborate the ratings of the respondents. The likelihood of bias and variations in residential neighbourhoods in the towns are likely to affect individual ratings of their satisfaction with these services. Another limitation is that private or neighbourhood organized services like vigilante, private security guards and private water boreholes were not included in the ratings. These services make life bearable in the towns and can influence SRH.

5. Conclusion

Non-satisfaction with EnQoL and poor SRH was indicated by older urban-dwelling adults in this study. Satisfaction with EnQoL was associated with SRH by overall assessment, but EnQoL domains of health facilities and public utilities (water supply, sewage and refuse disposal) were found to have the strongest relationship with SRH. The implication is that the urban areas had inadequate water supply and poor sanitation despite the oil production-related high economic profile of the state used as a setting for the study. The poor services may predispose older adults to diseases more than others because of weakening resistance associated with ageing. The socio-demographic variations observed with self-rated health leads to the conclusion that although environmental quality of life can influence the health status of urban-welling older adults in Nigeria, it is not the only determinant. Depression, loneliness, poor income, lack of care, limited social engagement, and physical inactivity also influence the health status of urban-dwelling older adults in Nigeria (Gureje et al.,2007; Ejechi, 2013; 2015).

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