

Effects of Access to Infrastructure on Individual Subjective Wellbeing in Ilorin South, Nigeria

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Abstract

This study analysed the effects of access to basic infrastructure on the subjective wellbeing of citizens in urban Ilorin South Local Government Area, Kwara State, Nigeria. Specifically, the study examine the effects of: access to water, provision of electricity, cleaner cooking methods and access to toilet on the subjective wellbeing of the people in the study area. A simple random survey method was used to administer carefully designed questionnaires in the Local Government Area in 2014. An ordered probit regression method was used to analyse the collected data. Our results show that, access to safe drinking water, sanitation, frequency of medical check-up, cleaner cooking energy, socialisation and subjective health status are significant positive determinants of individuals' subjective wellbeing. The relationship between subjective wellbeing and access to electricity, gender and the interaction of education and income (eduincome) are not significant from our result. The study recommends that policy makers should make safe drinking water and sanitation more accessible to the citizens and as well encourage frequent medical check-up and usage of cleaner cooking methods in order to improve citizens' subjective wellbeing in the study area. This study clearly shows that provision of infrastructure is an important determinant of subjective wellbeing which is the main purpose of this paper. In addition, it will be very easy for government to maintain peace and order in the country if infrastructure is provided due to its positive relationship with wellbeing since most of the crises in the country are caused partly by inadequate provision of essential services such as infrastructure.

Keywords: subjective, wellbeing, water, infrastructure, sanitation, Ilorin South, Nigeria

INTRODUCTION

Infrastructure occupied an important place in the development of a nation. In addition, it is also an unavoidable part of human sustenance. This is the reason why both developing and developed countries in the world thrive on the provision of necessary infrastructure in order to drive their economy. There is a general believe that infrastructures enhance economic development and as well positively contribute to citizens' social life.

Infrastructure is generally defined as the physical framework of facilities through which goods and services are provided to the public. Its linkages to the economy are multiple and complex, because it affects production and consumption directly, creates positive and negative spill over effects and involves large inflow of expenditure (Deepika, 2003). Infrastructure from an economic standpoint consists of large capital intensive natural monopolies such as highways, other transportation facilities, water and sewer lines and communication systems.

World Development Report divides infrastructure stock into physical and social infrastructure. The former includes services such as: electricity, transport, roads, water, sanitation etc, while later includes education and health facilities. Other forms of infrastructure may be classified as institutional infrastructure such as banking, insurance and civil administration. Provision of infrastructure is primarily dominated by the public sector. Because infrastructure investments are huge, it is difficult for policy makers to match the supply of infrastructure with its demand at all times. Moreover, they are usually non-rival and non-excludable in nature, which implies that consumption of a service by one consumer does not exclude others from consuming it, nor does this consumption involves rivalry on the basis of purchasing power or any other feature. The consumers do not voluntarily pay for these services and these necessarily become "unpaid input". However, government steps in and provides these services through the budget. There is a general notion that government investment in infrastructure has been inadequate, uncertain and inefficient and hence commercialization

of infrastructure is important for developing economies to compete with the developed world (Deepika, 2003)

Some of the several ways through which infrastructure contributes to economic development is by increasing productivity and providing amenities which enhance the quality of life. The term 'Quality of Life' refers to the general wellbeing of individuals and society. However, quality of life should not be confused with the concept of standard of living, which is based primarily on income. Instead, standard indicators of the quality of life include not only wealth and employment but also the built environment, physical and mental health, education recreation and leisure time, and social belonging.

In recent years, scholars in a wide range of disciplines have attempted to measure and analyse wellbeing in various contexts (Hoorn, 2007). However various definitions agree (for example Seligman, M. E. P. 2002; Selim, S. 2008) that wellbeing is multidimensional and may reflect in material living standard, health, education, personal activities, political voice, social connection, the environment, a sense of freedom, and the opportunity to engage effectively with others, especially for good purpose.

Social scientists are always trying to keep up with social phenomena; therefore, theories are aimed at explaining social and economic challenges. Thus, a social phenomenon exists first, and only later is a theory constructed to explain that phenomenon. The study of subjective wellbeing is no exception. Research in this field can be dated back to the late 1950s and 1960s. On the one hand, it was grounded in sub-concepts of subjective wellbeing, such as subjective welfare, happiness, life satisfaction, and mental health

Diener (2005) defines subjective wellbeing as "an umbrella term for different valuations that people make regarding their lives, the events happening to them, their body and minds, and circumstances in which they live". McGillivray and Clarke (2006) states that Subjective wellbeing involves a multidimensional evaluation of life, including cognitive judgment of life satisfaction and effective evaluations of emotions and moods. In general, people's own perspectives of the quality of their lives can play an important part in building up a picture of the wellbeing of the population. Therefore, subjective wellbeing encompasses all aspect of human life. The social indicators of Subjective wellbeing include health, education, housing, sanitation and water supply otherwise known as infrastructure. It has been assumed that there is a direct relationship between Subjective wellbeing and infrastructure. Therefore, if there is

inadequate provision of infrastructure, it is theoretically expected to have a negative effect on the subjective wellbeing of the people in the country.

Dissatisfaction in life has several consequences both for the society, family and individuals. When majority of citizens are dissatisfied with their lives, it will lead to low productivity which may eventually reduce a country's Gross Domestic Product (GDP). When a family is made up of unsatisfied members, such family will frequently experience misunderstandings. When an organisation is made up of group of unsatisfied workers, productivity will be very low and hence profitability. An unsatisfied individual cannot easily flow with others and may eventually commit suicide in the future. Citizens' inability to experience average life satisfaction can result in violence and general unrest in the country. While it is difficult to satisfy all human wants, it is however essential to satisfy basic needs that enhance human subjective wellbeing.

Though studies on subjective wellbeing are very important, scholars' especially in developing countries including Nigeria had paid less attention to its analysis. In recent past, Nigeria has been experiencing social unrests in different parts of the country mainly due to feeling of lack of satisfaction by the citizens. From the Niger delta, to the south-south, the south-west as well as all the zones in the northern parts of the country, there is virtually no section of the country that is at rest. Several youths are now actively involved in robbery and kidnapping. Some of these criminals often confessed when caught that they decided to join their unlawful gangs due to their lack of satisfaction with their lives.

Therefore, this study intends to examine the effects of provision of infrastructure on subjective wellbeing of the self-employed individuals living in Ilorin south local government, Kwara State, Nigeria. Specifically, the study will proffer answers to four questions, which are: what are the effects of access to water on subjective well-being; what are the effects of access to electricity (access to power) on subjective wellbeing; what are the effects of access to sanitation on subjective wellbeing and what are the effects of clean cooking energy on the subjective wellbeing of the people within the study area?

This study was carried out in Ilorin South Local Government Area of Kwara State, Nigeria. Its headquarters is situated at Fufu. Ilorin South Local Government Area comprises of villages and towns. It has an area of 174 km² and a population of 208,691 as at the 2006 census. The people in the area are mainly

Yoruba, Fulani Hausa, Ibo and few minority ethnic groups.

Statement of the Problem and the Study Limitation

In a competitive democracy, one of the objectives of the government in power is to satisfy citizens' needs. In Nigeria there are evidences of lack of satisfaction with the government in power in almost all local governments and states. While many are expressing their dissatisfaction peacefully, others have resulted to violence such as destruction of life and properties. Others are even calling for secession and disintegration of the entity known as Nigeria. Various conflicting reasons have been advanced for the general dissatisfactions with the government and different solutions have been suggested on what the government can do to increase general wellbeing. Will government be able to reduce tension in the country by increasing provision of infrastructure or not?

The study is limited to a Local Government Area in one of the State Headquarters in Nigeria. It is not financially feasible at the moment to extend the study to other local governments in the country. We may not be able to generalise the results of the study until a similar research is carried out in other places since subjective wellbeing may be area specific in nature.

REVIEW OF LITERATURE

Drawing from Mc Gillivray and Clark (2006) "subjective well-being involves a multidimensional evaluation of life, including cognitive judgment of life satisfaction and affective evaluations of emotions and moods". In other words, subjective well-being reflects how people express the quality of their lives based on their personal assessment. In psychology, happiness is a combination of life satisfaction and the relative frequency of positive and negative effects. In recent times, growth in the study of subjective well-being reflect larger societal trends concerning the value of individual, the importance of personal views in evaluating life, and the recognition that well-being is not necessarily limited to economic prosperity, Francisco G G (2017)

The first theory known as the liking or Hedonic Happiness theory focuses on maximizing pleasure and minimizing pain. The theory proposed immediate gratification as the path to a meaningful life. It is concerned with what makes events and life pleasant or unpleasant, interesting or boring, joyous or sorrowful (Watson 1988).

The next theory is the needing classification of subjective wellbeing which proposed that a set of

elements that every human needs, regardless of individual values, is essential to attaining subjective well-being. As proposed by Maslow (1943), there are hierarchy of five levels of basic needs such as physiological needs, safety, love/affection, self-esteem and self-actualization that must be satisfied in order, one after another. In the same school of thought, MacArthur and Wilson (1967) proposed that basic universal needs exist. Quick fulfilment of these needs causes happiness while delay or outright lack of fulfilment result in unhappiness.

The next classification is the 'wanting theory', which suggests that subjective wellbeing is determined by the pursuit of desires or goals. However, the question unanswered is whether individual derived subjective wellbeing from the journey or the destination? Based on the wanting theory, the journey (i.e. wanting) is more important than the destination (i.e. pleasure from fulfilment of the goal). This theory concluded that most pleasure comes from the progress towards a goal rather than the fleeting feeling of contentment after the accomplishment of a goal (Davidson, 1994)

Another model of subjective well-being suggests that we compare experiences or emotions to some standard. MacArthur and Wilson (1967) proposed that satisfaction from the fulfilment of needs depends on the degree of expectation and adaptation. In his own theory of multiple discrepancy theory, Michalos (1985) suggests that individuals compare themselves to many standards such as other people, past conditions, ideal levels of satisfaction, and needs or goals. A discrepancy due to an upward comparison (such as: my expectation was better than my actual situations) results in decreased satisfaction whereas a downward comparison (such as: my expectation was worse than my actual situations) will result in an increase in satisfaction.

The next theory is known as the dichotomous model of subjective wellbeing. This theory differentiates between top-down and bottom-up determinants of subjective wellbeing. Bottom-up factors or determinants refer to external events, situations, and demographics. Top-down factors represent individual factors (such as values and goals) that trigger external events that influence well-being. In the top-down model, an individual's disposition filters and interprets specific, lower-order events. From the theory, high inter correlations with domain satisfactions could be evidence for a top-down model. In a top-down model, subjective interpretations of events negatively influence subjective wellbeing as oppose to objective criteria (Feist et al. 1995). (Feist et al. 1995). In order to really understand subjective wellbeing, it is important to recognize the

integration of these two theories. (Diener 1999; Veenhoven 1999, 2004; Brief et al. 1993; Feist et al. 1995; Kazufumi M. 2017).

There is another theory known as the Orientations to Happiness Model. This theory presumes different ways to be happy. The theory identified three roads to happiness, which are: positive emotions and pleasure (the pleasant life), engagement (the engaged life), and meaning (the meaningful life). The theory proposed that people choose different paths but the most satisfied individuals are the ones who choose all the three with particular emphasis on engagement and meaning (Guignon 1999; Peterson 2006; Russell 2003; Seligman 2006; Peterson et al. 2005).

Finally, the last theory proposed by Keyes (2002) is the mental health continuum. He divides peoples' life into languishing and flourishing, which he further refers to as ill-being or well-being. Keyes described individuals with complete mental health as 'flourishing' in life with high-levels of subjective wellbeing while individuals with incomplete mental health are 'languishing' in life with low-levels of subjective wellbeing. He defined the components of subjective wellbeing as positive emotions, psychological and social well-being.

Measuring Subjective Well-Being

Most empirical studies on subjective wellbeing are based on survey data on self-reported levels of happiness or life satisfaction. It comprises of several distinct concepts. Specifically, distinction is usually made between evaluative measures of wellbeing that reflect some cognitive reflection on the part of the respondent and measures of affect, that capture the respondent's emotional state at a particular point in time. Affect, in turn, has distinct positive (joy, happiness, contentment) and negative (sadness, anxiety, anger) components

However, while these concepts are correlated with each other and with evaluative measures in the expected way, the correlations are significantly less than 1. The main focus of this paper is on life satisfaction, which is the most commonly used evaluative measure of wellbeing. Life satisfaction is of interest in this case both because it captures the same sort of evaluations that people use to make decisions about their lives (Kahneman, 1999). Life satisfaction is typically measured via a question similar to the following from the World Values Survey: All things considered, how satisfied are you with your life as a whole these days? Using this card in which 0 means you are "completely dissatisfied" and 10 means you are "completely satisfied" How would you rate your satisfaction with your life as a whole? Or the question

may be "All things considered, how satisfied are you with your life as a whole these days on a scale of 0 1 2 3 4 5 6 7 8 9 10". At a very general level, questions on subjective wellbeing have a degree of intuitive plausibility in that concepts such as "satisfaction" and "happiness" are subjects that people can easily relate to. In support of this, there is much evidence that people find it easy to respond to questions on subjective wellbeing. For example, subjective questions have lower non-response rates than in the case for many. This Likert scale has been subjected to extensive reliability and validity testing internationally (Lee et al., 2006)

Source of Data, Model Specification and Method of Estimation

This paper analyses subjective wellbeing drawn from the data collected in Urban Ilorin South, Kwara State, Nigeria in 2014. The questionnaire asks people to rate their lives satisfaction, on a Likert scale 0 to 10; where 10 means 'Very satisfied' and 0 means very dissatisfied'. The question asked is "on average, how do you feel about your life as a whole right now". A simple random survey method was used to administer the questionnaire similar to the World Value Survey and the World Data Base on Happiness in Ilorin South between January and March, 2014.

The questionnaire targeted the informal sector in Ilorin South, Nigeria. These are self-employed, so their main benefit from Government is in the form of infrastructural provision. Most of the previous unrests in the country are caused by lack of satisfaction among this group in the society. Infrastructures considered in this study are basic human necessities that make life unbearable when they are not available. However, it is possible for the informal sector to cope with lack of them if they are able to adjust to the realities of their unavailability. If they cannot cope, then it serves as a source of discomfort and may eventually lead to unrest in the society. Ability to cope with life challenges such as lack of infrastructure cannot be generalised. It varies from one country to another, from one culture to another and from one ethnic group to another. Therefore, each country, culture and ethnic nationality needs to be studied in order for the policy makers to know how to take pro-active measures and prevents crises due to dissatisfactions among the populace.

Model Specification

An adapted standard model of a subjective wellbeing function used in Adewara and Visser (2013) in their study on the determinants of subjective wellbeing in South Africa and presented below with minor modifications for the purpose of this study is used to

analyse the determinants of subjective wellbeing in the study area.

$$sw_i = a_0 + a_1\lambda_i + a_2\eta_i + u_i \quad (1)$$

Where sw is the self-reported level of satisfaction, λ is a vector of infrastructure, η represents demographic and socioeconomic factors, u is the random component of the error term, while subscript i indicates individual.

Assuming infrastructure are access to water (aw), access to electricity (po), access to toilet (to), and type of cooking energy (co), then:

$$\lambda_i = f(aw, po, to, co) \quad (2)$$

After substituting for infrastructure and linearizing in (1), the subjective wellbeing model then becomes:

$$sw_i = a_0 + a_1wt_i + a_2po_i + a_3to_i + a_4co_i + a_5\eta_i + u_i \quad (3)$$

Based on theories and available empirical studies, demographic variables linked with subjective wellbeing are: age of an individual (ge), gender (gd), income (cn), frequency medical check-up (me), subjective health status (hs) and socialisation (sc). Therefore,

$$\eta_i = f(ge, gd, cn, me, hs, sc) \quad (4)$$

Subsequent substitution and linearization of (4) into (3) then transformed the final subjective wellbeing model to be estimated into:

$$sw_i = a_0 + a_1wt_i + a_2po_i + a_3to_i + a_4co_i + a_5ge_i + a_6gd_i + a_7cn_i + a_8me_i + a_9hs_i + a_{10}sc_i + u_i \quad (5)$$

Where variables are as defined above, a_0 = Constant Term; $a_1 - a_{10}$ = Parameters to be Estimated and u_i = Stochastic Error Term.

Method of Estimation

Due to the ordered nature of the dependent variable for this study (i.e subjective wellbeing is an ordered variable), an OLS method of estimation is not appropriate, so the only alternative is either to use ordered probit or ordered logit regression method. Either of these two methods is sufficed so the study used ordered probit method for the analysis. Subjective wellbeing was ordered from 0-10 representing worse to the best wellbeing respectively.

In addition, concentration index was used to explain inequality or differences in respondent subjective wellbeing both in the entire study area and within each ethnic group in Ilorin South, Nigeria with the aim of having better understanding of the citizens's subjective wellbeing. We used the well-known Kakwani et al. (1997) method to compute inequality in subjective wellbeing, in Ilorin South, Nigeria. The index is given as;

$$C = \frac{2}{\mu} \sum y_i R_i - 1 \quad (6)$$

where; C is the concentration index, which is a measure of relative inequality, like the Gini coefficient. μ is the mean of y , y is the health variable. R is the fractional rank of the i th person in the income distribution.

PRESENTATION AND DISCUSSION OF RESULTS

In all, about 580 questionnaires were administered but about 564 were returned while about 545 were completed. About 299 females and 252 males completed the questionnaire. Ethnic distribution of the respondent are: 349 Yorubas, 70 Ibos, 50 Hausas and 75 for the minority ethnic groups. The Yoruba are the majority due to the fact that the study area is dominated by the Yorubas. Religion distribution of the respondents shows that about 226 and 318 Christians and Muslims respectively completed the questionnaires. Age distribution of the respondents shows that the youngest respondent was 20 years five Months old while the oldest respondent was 60 years old in 2014.

Due to the fact that study area like all others in Nigeria is ethnically heterogeneous, the study further presents ethnic representation of subjective wellbeing for a better understanding. There are basically three major ethnic groups in the study area, namely: Yoruba, Hausa and Ibo. These ethnic groups are separately considered while all other smaller groups are jointly considered. The result in the table shows that about 43% of the Yorubas' in the study area not satisfied with their lives while about 57 percent are relatively satisfied. For the Hausas, about 64% said they are not satisfied with their lives while only about 34% of them are less satisfied with their lives. About 39% of the Ibo ethnic group living in Ilorin South are not satisfied with their lives in 2014 while about 61% said they are satisfied with their lives generally. Other ethnic groups in Ilorin South apart from the three major groups are the least unsatisfied from the result. Only about 31% of all other groups are less satisfied with their lives while the remaining 69% said they are generally satisfied with their lives. In all, about 42.7% of the people living in Ilorin South, Nigeria are less satisfied with their lives. Only about 56.3% are satisfied generally with their lives as at 2014.

Table 1: Ethnic Distribution of Subjective wellbeing in Ilorin South, Nigeria

Subjective wellbeing	Yoruba	Hausa	Ibo	Minority	Total	Percentage of Total
0	7	0	0	4	11	2.2
1	6	0	2	1	9	1.7
2	8	1	2	1	12	2.2
3	20	4	5	3	32	5.9
4	33	5	7	2	47	8.6
5	76	22	11	12	121	22.2
6	46	5	18	10	79	14.5
7	40	5	8	11	64	11.8
8	57	7	10	20	94	17.3
9	22	1	6	7	36	6.6
10	34	0	1	4	39	7.2
Total	349	50	70	75	544	100

Source: Authors computations

It is evidence from the above table and discussion that there are differences in subjective wellbeing among the various ethnic groups in Ilorin South, Nigeria. However, it is not yet very clear if there are within-ethnic gender, income, educational level, frequency of medical check-up, age and party politics involvement variations. It will be interesting to explore this possibility further in our analysis of subjective wellbeing in the study area. Concentration indices method has been used to analyse the subjective wellbeing further and the results are presented below. The respondents are group based on Gender, Income, educational level, medical check-up frequency and party politics participation.

From the results in Table 2, there is no significant variation in subjective wellbeing based on gender either in the whole study area or within each of the various ethnic groups in Ilorin South, Nigeria. In the case of income level, there is a significant variation in subjective wellbeing in the Ilorin South to the disadvantage of high income earners. The negative sign of the income concentration index for Ilorin South shows that the subjective wellbeing of the lower income earner is higher than the high income earners. Desires for more profit and the fear of business failures among successful business owners may be responsible for their

lack of satisfaction in life. At the ethnic groups' level, only the minority ethnic group (others) has significant difference in subjective wellbeing based on income.

The next grouping of the respondent is based on their educational attainment. From the result, citizens with higher education level are significantly more satisfied in Ilorin South than those with lower education. Subjective wellbeing difference in favour of the high educated is also the case among the Yorubas, the Hausas, the minority from the results in Table 2. Only Ibo ethnic group has no significant difference in subjective wellbeing based on educational level difference. This is not surprising due to the fact that Ibo people are highly enterprising irrespective of their educational level. The next variable is medical check-up differences and subjective wellbeing. The concentration indices for this variable show that only Yoruba and Minority ethnic group had significant difference in subjective wellbeing on the basis of medical check-up difference. The results show that the Yorubas and the minority that regularly go for medical check-up had higher significant subjective wellbeing than others within each of the two ethnic groups.

Table 2: Concentration Indices of Subjective wellbeing in Ilorin South, Nigeria

Group	CI by Gender	CI by Income	CI by Education	CI by Medical	CI by age	CI by Politics
Ilorin South	-0.00798316 (0.01831147)	-0.02449562 (0.01903025)	0.06977207 (0.02027326)	0.01831147 (0.02059647)	0.00657364 (0.02083043)	0.03797470 (0.01516295)
Yoruba	-0.00463497 (0.02305190)	-0.02202659 (0.0242067)	0.06862070 (0.02478382)	0.04081346 (0.02524571)	0.00844414 (0.02567330)	0.04566910 (0.01952502)
Hausa	0.00113379 (0.09136608)	0.04166666 (0.09429142)	0.18934245 (0.10680154)	0.09777782 (0.10153692)	0.10222226 (0.10886902)	0.05777781 (0.08094880)
Ibo	-0.02380952 (0.04598265)	0.01993355 (0.04644379)	-0.01330531 (0.05311565)	0.04119603 (0.05245882)	0.03521596 (0.05868861)	0.03623187 (0.03041228)
Minority	-0.00727649 (0.03708331)	-0.09927230 (0.03994628)	0.07117916 (0.04693294)	0.11384620 (0.04570752)	0.11384620 (0.04524331)	-0.00923077 (0.03334694)

Note: Standard errors of the concentration indices are in parenthesis; ***, **, * indicates significant at $p < 0.01$, $p < 0.05$, and $p < 0.1$ respectively. CI represents concentration indices. **Source:** Authors' computation

Grouping by age shows that only Minority ethnic group has significant difference in subjective wellbeing on the basis of age of the respondents. All other ethnic group and Ilorin South inclusive have no significant difference from the coefficients of their concentration indices. The last grouping is whether a respondent is actively participating in politics or not. Participating in party politics attracts some financial gains and even influence in the society. The results show that party politics participation is highly significant from the concentration indices for Ilorin South and Yoruba ethnic group in the study area. It shows that those participating in party politics in Ilorin South as a whole and within the

Yoruba ethnic group report higher subjective wellbeing than others who are not participating in politics.

Actually, politics is a big business in Nigeria with several legal and illegal benefits.

Table 3: Effects of access to Infrastructure on Subjective wellbeing in Ilorin South, Nigeria

Variables	Ordered Probit Regression Results				
	Model 1	Model 2	Model 3	Model 4	Model 5
age	0.0384 (0.0260)	0.0384 (0.0276)	0.0323 (0.0271)	0.0275 (0.0269)	0.0332 (0.0271)
age2	-0.000528 (0.000325)	-0.000528 (0.000362)	-0.000471 (0.000358)	-0.000434 (0.000358)	-0.000486 (0.000358)
water	0.0582*** (0.0220)	0.0582*** (0.0222)	0.0591*** (0.0222)	0.0582*** (0.0222)	0.0563** (0.0221)
cooking energy	0.175** (0.0719)	0.175*** (0.0648)	0.170*** (0.0645)	0.181*** (0.0646)	0.183*** (0.0637)
power	0.0235 (0.0446)	0.0232 (0.0410)	0.0230 (0.0408)	0.0219 (0.0410)	0.0275 (0.0408)
toilet	0.110** (0.0544)	0.110** (0.0534)	0.113** (0.0533)	0.121** (0.0532)	0.109** (0.0530)
subjective health	0.135** (0.0565)	0.135** (0.0527)	0.136*** (0.0525)	0.132** (0.0527)	0.123** (0.0525)
medical	0.0756** (0.0345)	0.0758** (0.0356)	0.0739** (0.0354)	0.0813** (0.0355)	0.0851** (0.0349)
gender	-0.000854 (0.0925)	-0.000976 (0.0911)	0.00460 (0.0907)	-0.00913 (0.0910)	-0.0320 (0.0899)
education	0.0431 (0.0860)	0.0491 (0.0367)	0.0408 (0.0363)		
income	-1.88e-05 (2.79e-05)	-1.68e-05 (1.13e-05)			-1.53e-05 (1.12e-05)
eduincome	5.43e-07 (7.11e-06)			-2.63e-07 (2.01e-06)	
socialisation	0.111* (0.0601)	0.111* (0.0612)	0.111* (0.0607)	0.123** (0.0608)	0.117* (0.0605)
Constant cut1	0.308 (0.597)	0.330 (0.587)	0.367 (0.584)	0.154 (0.562)	0.0371 (0.560)
Constant cut2	0.574 (0.598)	0.596 (0.582)	0.632 (0.579)	0.422 (0.557)	0.306 (0.555)
Constant cut3	0.808 (0.604)	0.830 (0.580)	0.864 (0.577)	0.657 (0.556)	0.541 (0.553)
Constant cut4	1.211** (0.608)	1.233** (0.580)	1.263** (0.577)	1.059* (0.556)	0.955* (0.554)
Constant cut5	1.569*** (0.607)	1.591*** (0.581)	1.618*** (0.578)	1.416** (0.557)	1.317** (0.555)
Constant cut6	2.210*** (0.612)	2.232*** (0.584)	2.275*** (0.581)	2.054*** (0.560)	1.954*** (0.557)
Constant cut7	2.601*** (0.615)	2.623*** (0.586)	2.660*** (0.583)	2.441*** (0.562)	2.341*** (0.559)
Constant cut8	2.947*** (0.618)	2.969*** (0.589)	3.008*** (0.586)	2.784*** (0.564)	2.680*** (0.561)
Constant cut9	3.599*** (0.629)	3.621*** (0.592)	3.656*** (0.589)	3.434*** (0.567)	3.318*** (0.564)
Constant cut10	3.969*** (0.631)	3.991*** (0.593)	4.027*** (0.591)	3.807*** (0.569)	3.690*** (0.566)
Observations	523	523	528	523	529
Log Likelihood:	-1100.4371	-1109.7242	-1116.1459	-1102.1694	-1116.1459
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000

Note: Standard errors are in parentheses. ***, **, * indicates significant at $p < 0.01$, $p < 0.05$, and $p < 0.1$ respectively
Source; Authors' computation

The results of the ordered probit regression analysis of various models are presented above. It is necessary to note there that the signs and the level of significant of the variables rather than the coefficient are the most important parts of the ordered probit results. In addition, the results of ordered probit regression are different from the normal regression analysis due to the special nature of the dependent variables. Both Pseudo R^2 and the normal R^2 are often not used to explain ordered regression appropriately. There are several Pseudo R^2 s with contradictory conclusions because they do not exactly mean what R^2 means in OLS. Rather it is the Log Likelihood researchers normally used to fit their models. From the Log Likelihood and Prob > χ^2 results, it is clear for all the models that at least one of the predictors in each of the regression model is not equal to zero. The first model includes all variables theoretically assumed to be determinants of individual subjective wellbeing based on the data collected. Note that age2 is included to account for non-linear relationship between age and an individual subjective wellbeing. The result shows that access to water; cleaner cooking energy and toilets which are part of the study measures of infrastructure are all positive and significantly related to probability of an individual reporting higher subjective wellbeing. It means that access to these measures of infrastructure increase individual probability of high subjective wellbeing. Access to water is the most highly significant variable at 1%. The p-values of these three important variables are 0.01, 0.05 and 0.05 respectively from the result. Surprisingly, access to electricity has no significant effect on an individual probability of subjective wellbeing. Other variables having significant effects on the probability of subjective wellbeing from the result are individual subjective health status, frequency of medical check-up and socialisation. These variables are significant at 5%, 5% and 10% confidence level respectively. Age, age-squared, Income, education, gender and the interaction between income and education are all not significant determinants of the probability of subjective wellbeing in the study area.

The thresholds of the dependent variable, that is, the subjective wellbeing represented by cut1- cut10 show that seven out of the total 10 categories are statistically significantly different from one another. Due to the none significance of important variables such as power, education and income, other models are analysed in order to detect the sensitivity of the result in model 1 to the effects of these variables and to test the reliability of their signs. In model 2, the interaction variable, eduincome was omitted from the regression but the signs of all the significant variables remained unchanged while other variables not significant in the

first model remained unchanged. The major difference between model 1 and two is that cleaner energy is more strongly significant in model 2 at 1% as against 5% in the earlier model. Further test in model 3 when both income and eduincome were omitted still confirmed the validity of the result in model 1. In model 3 however, subjective health status becomes even stronger determinants of an individual reporting high subjective wellbeing compare to the results in model 1 and 2. Education and income were omitted in model 4 but the result in model 1 was still validly consistent while the significant level of socialisation becomes stronger than in the previous models. Lastly, in model 5, education and eduincome were omitted but the result also confirms the earlier result in model 1. In all the models the seven thresholds that were significant in model 1 all maintained their significant levels.

SUMMARY AND RECOMMENDATIONS

The results presented above are very important both to individuals and the policy makers. The result shows that there is positive relationship between infrastructural facilities and subjective wellbeing in the study area. This simply indicates that when access to infrastructural facilities increases; there will be a corresponding increase in individual subjective wellbeing. Therefore policy makers can improve citizens' subjective wellbeing and reduce feeling of dissatisfaction among the populace in the study area by increase in the provision of infrastructure for the benefits of the people. Specifically, water is an important part of human existence, it is therefore necessary for the Government to prioritise provision of safe drinking water for the benefit of the people and to increase the probability of their subjective wellbeing. It should not be difficult for the government to provide safe drinking water to the people in the study area. Government can do this by drilling of public boreholes in every nook and cranny of the area. Without this, it will be difficult for the government to maintain peace and support of the people even in payment of taxation and other government expectations from the citizens.

It is not surprising that access to electricity is not significant considering regular power outage in the study area. It suggests that people must have adjusted their lives to living without electricity since the problem has persistent over the years despite numerous unfulfilled promises by successive governments. However, it is very important for those responsible for the provision of power to wake up to their responsibility in order to improve the standard of living of the people in the study area and as well increase internally generated revenue from the multiplier effects of regular power supply on businesses in the area.

Since regular medical check-up is significantly related to higher probability of subjective wellbeing, it is necessary for the policy makers to encourage citizens in the study area to constant check their health status in order to prevent sicknesses instead of reacting to sicknesses which will not only increase costs, causes emotional stress but may also leads to death. Cleanliness is said to be next to godliness. Therefore, cleaner cooking energy increases probability of individual subjective wellbeing. It is necessary for the policy makers to discourage unclean cooking energy such as firewood and charcoal in the study area by making kerosene and cooking gas more affordable to the people in the study area. Government can do this by subsidising either production or consumption of these cleaner sources of energy. In fact, if power is regular, individuals can use electricity instead of Kerosene for cooking since Kerosene stove is not as clean as electric stove.

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