

## Travel Behaviour and Mobility Challenges of Disabled Elderly in Selected Cities of Ogun State, Nigeria

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**Abstract:** The growth of disabled elderly with mobility constraints particularly in developing countries including Nigeria is becoming worrisome. The study examined travel behaviour and mobility challenges of disabled elderly in four cities in Ogun State, Nigeria. Purposive and convenient sampling methods were used to administer 400 questionnaire and data elicited were analyzed descriptively and inferentially. Findings revealed that most of respondents were male (69.5%), aged between 66-70 years (43.5%), and characterized with visual impairment (62%). On travel behaviour, majority generated about 10 trips a week (68.5%), through tricycle (45.5%) and basically for medical purposes (81%). Mobility challenges faced by respondents are mostly deplorable road (92%), inaccessibility to public transport (84%), poor public vehicle condition (76%) and longer-waiting time at bus stops (70%). These challenges have been blamed on weak policy framework and systematic withdrawal of government in public transport investment. Furthermore, binary logistics regression result shows that respondents travel behaviour is statistically influenced by their socioeconomic status ( $p < 0.000$ ). The Pseudo R-Square [Cox & Snell's R-Square (36%) and Nagelkerke's R (70%)] show that the model is relevant in predicting influence of vehicle ownership on travel behaviour. The study recommended among others, provision of quality public transport scheme with special features for disabled.

**Keywords:** Disabled, elderly, mobility, travel behaviour, cities

## 1. Introduction

Persons with disabilities around the world are usually faced with obstacles and restrictions which prevent their equal participation in all spheres of life activities in the society. Often, aged with disabilities are among the most adversely affected in terms of mobility constraints [1]. However, mobility of the elderly in developing countries has not been given much recognition as compared to other age groups in terms of transport infrastructural facilities provision and policy making. Globally, the population of the elderly who are above 60 years constitutes 11% of the world population in 2007, and would account for over 22% of the global population by 2060 [2]. This percentage contribution was complemented in the study of Ref. [3] who opines that the aged/ageing with disabilities accounts for 23% to 30% of the world population.

The number of aged with disabilities is fast increasing in developing world, and is projected to be higher in comparison to developed countries [2]. Importantly, mobility of the disabled elderly is not only crucial to their general welfare, but also very essential to their quality of life, survival and sustainability. No doubt, poor mobility means promote social exclusion and poverty due to inadequacy, inequity and inequality in transport infrastructural facilities provisions and services for disabled persons [4]. Meanwhile, efficient mobility and accessibility are adjudged to be pre requisite for increasing life expectancy and healthy living as well as reduction in boredom and depression of the old [5-7]. In addition, Ref. [8] reveals that older people including the disabled, should be encouraged to make trips such as to and from shopping malls, health facilities, visits to friends and family, worship venues, gym and entertainment places like cinema hall etc. in order to improve their level of wellness and reduce boredom and depression.

Based on the Sustainable Development Goal 3, promotion and protection of the elderly as well as their full participation in a society is an integral part of 2030 Agenda as no age group and gender should be left behind especially on transport policy making [1]. The 2030 Agenda on SDGs, however, makes a particular reference and emphasis to conscious inclusion and preference to older persons with or without disabilities as regard ending poverty, provision of good health and well-being towards achieving a sustainable development. Also, the Convention on Rights of Persons with Disabilities (CRPD) sets out the legal framework for the promotion and protection of the rights and development of persons with disabilities in the society. Specifically, Article 9 stresses special need for accessibility for the disabled aged, Article 19 emphasized the need and right of the disabled elderly to live independently and be included in community development, while Article 20 stresses the need to own personal or private mobility for ease of movement [1]. It is worthy to note that in Nigeria and some

other developing African countries, the elderly has mobility difficulties with long-term health conditions and disabilities [9]. Also, the precarious situation of the aged with disabilities no doubt, revealed high level of the relevance of urban mobility planning and behavioural understanding of the disabled elderly living in cities; hence, this forms a serious concern and focus of discourse of this study. Supporting this assertion, [4] observes that lack of quality mobility of the elderly contributes greatly to hardship being experienced which leads to their untimely death which results from boredom and inability to get access to medical facilities when the need arises. To solve this enigma, there is need to understand and holistically plan for the mobility needs of the aged with disability in Nigerian cities, most especially in the emerging cities of Ogun State, Nigeria. It is on this premise that this study examined travel behaviour and mobility challenges of disabled elderly in four (4) selected emerging cities in Ogun State, Nigeria. Specific objectives are to assess the socio-economic and demographic characteristics of disabled elderly, explore the travel behavioural characteristics of disabled elderly, identify the mobility constraints faced by disabled elderly, and the relationship between the socio-economic attributes and the travel behaviour of the disabled elderly in the study area.

## **2. Study Area and Methods**

### **2.1 Study Area**

The study area, Ogun State is geographically situated within latitude 6°North and 8°North and Longitude 2<sup>1/2</sup> and 5°East of the Greenwich Meridian. It is bounded in the north by Oyo State and Osun State, in the southern side by Lagos State and the Atlantic Ocean, in the eastern side by Ondo State and at the west by Benin Republic and Ondo State (Figure 1). Ogun State covers about 16,742 square kilometers with population of 5,649,270 in 2019 and equally accounts for about 3% of Nigeria's total population.

### **2.2 Methods**

The methods and resources for this research were obtained through primary and secondary data sources. Primary data involved field observation and the use of questionnaire which contains both open and close ended questions that sought data on the socio-economic attributes of the respondents, travel behaviour characteristics and notable mobility challenges faced. The study adopted non probability sampling of purposive and convenient sampling methods in respondents' selection and questionnaire administration. This method was adopted based on the fact that only disabled elderly were selected for this study. Conveniently, four hundred (400) disabled elderly (60 years of age and above) were selected

systematically in four different cities in Ogun State namely Ijebu-Ode, Abeokuta, Sagamu and Ota with a proportion of 100 respondents per city. However, the 400 conveniently sampled was based on the fact that the population of the disabled elderly in these cities was unknown. Meanwhile, the justification for selecting these cities namely Abeokuta, Sagamu, Ijebu-Ode and Ota was based on the fact that they are headquarters of the four geopolitical and administrative zones (Ijebu, Egba, Remo and Yewa respectively) in the Ogun state. Emphatically, respondents were systematically picked at major converging points including hospitals, pharmaceutical stores, and religion centers in the selected cities. In other words, for thorough validity and maximum control of research instrument, reasonable sample size of 400 (100 per city) was adopted.

The collected data were analyzed using both descriptive and inferential statistics. Descriptively, the data were presented in frequency tables complemented with figures to facilitate the interpretation of collected data. Binary logistics regression model was used to determine the result of the postulated hypothesis. The binary logistics regression was used to test the relationship between the socio-economic variable (vehicle ownership) and travel behaviour of disabled elderly in the study area. The binary logistics regression model was necessary to explain the prediction of variables which are likely to determine the outcome variable of socio-economic variable (vehicle ownership) which was based on a set of values that was dichotomously measured as: 1 if *yes*, and 0 if *otherwise* (Table 1). A number of travel behavioural variables of disabled elderly were selected and tested as predictors. These predicting variables are origin and destination of trips, preferred period of travel, purpose of trip, mode of travel, frequency of trips, length of trips, access to public transport, convenience of modal choice, and length of walk before boarding were equally coded on both dichotomous (0 and 1) and continuous basis (Table 2).

**Table 1** Operational Definition of Variables. Source: authors

	Variable Description	Label	Variable Operational Definition
1	Gender	<i>GEN</i>	Dichotomous (dummy): 0 = Male 1 = Female
2	Age	<i>AGE</i>	Continuous
3	Marital status	<i>MAS</i>	Dichotomous (dummy): 0 = Widowed; 1 = others
4	Educational level	<i>EDL</i>	Continuous
5	Employment status	<i>EMS</i>	Dichotomous (dummy): 0 = Employed; 1 = others
6	Monthly Income	<i>INC</i>	Continuous
7	Telephone accessibility	<i>TEO</i>	Dichotomous (dummy): 0 = Yes; 1 = No
8	Vehicle ownership	<i>VEO</i>	Dichotomous (dummy): 0 = Yes; 1 = No
9	Preferred period of travel	<i>VEO</i>	Dichotomous (dummy): 0 = Yes; 1 = No
10	Origin and destination of trips	<i>ODT</i>	Continuous
11	Purpose of trip	<i>POT</i>	Dichotomous (dummy): 0 = Work or recreation; 1 = others
12	Mode of travel	<i>MOT</i>	Dichotomous (dummy): 0 = taxi or mini-buses; 1 = others
13	Frequency of trips	<i>FOT</i>	Continuous
14	Length of trips	<i>LOT</i>	Continuous
15	Access to public transport	<i>APT</i>	Dichotomous (dummy): 0 = Yes; 1 = No
16	Convenience of modal choice	<i>CMC</i>	Dichotomous (dummy): 0 = Yes; 1 = No
17	Length of walk before boarding	<i>LWB</i>	Continuous

All these predictor variables were modelled against the dependent variable. However, the model is presented in the following equation:

$$\text{Logit}(y) = \log \{p / (1 - p)\} = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + \beta_3 * x_3 + \beta_4 * x_4 + \beta_5 * x_5 + \beta_6 * x_6 + \beta_7 * x_7 \quad (1)$$

Logit(Y) is the binary outcome variable indicating failure or success of existence of socio-economic variable (vehicle ownership);  $\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n = \text{Constant}$  coefficients for the independent variables;  $\varepsilon = \text{Error term}$ ;  $X_1 = X_n = \text{independent variables/ predictors}$ .

### 3. Results and Discussion

#### 3.1 Socio-economic and Demographic Characteristics of Disabled Elderly

The socioeconomic characteristic of the disabled elderly is shown in Table 2 with the majority of respondents sampled were between the age 66 – 70 years (43.5%), followed by age 60 -65 (33%) and elderly aged 70 years and above constitute 23.5% of total respondents. Male disabled elderly constitutes more than two third of respondents (69.5%) while female respondents constitute just 30.5%. Furthermore, 73% were married, widowed 13.3%, divorced 5.3% and separated 3.5%. The educational qualification of respondents skewed to half of total respondents for those that had tertiary education (50.5%), 18.5% had primary education, closely followed by those with secondary education (18%) and lastly, no formal education accounted for 13%. Occupational status shows that the majority of respondents were retired from active public service (90.5%), 4.5% engaged in one business or the other, 2% each for those that engaged in farming and artisan work while 1% accounted for those in active service. It is worthy to note that out of the 400 respondents sampled 62% were blind followed by the crippled (23.5%), deaf (7.5%), dumb (6%) and deaf and dumb (1%). And the cause of their impairment was as a result of ageing especially those with visual impairment and health challenges (sickness or disease), while 42% of those with physical impairment were caused by road crashes. Most of the disabled elderly earn their living and income through paid job and that is why they can afford to buy or procure assistive devices such as crutches, walking stick, hearing and visual aid devices e.g. gasses to aid their mobility.

Car ownership also enhances mobility need of the respondents (88.5%) with just only few with vehicle move about without too much stress for those that can still drive despite their impairment and those with driver. Some few respondents go about their activities through the use of alternative means of mobility when the need arises. Also, telephone accessibility and ownership has contributed greatly to personal and non-physical interaction of the disabled elderly with 75.3% respondents having access to telecommunication services which serves as an alternative to physical contact or mobility for their daily activities. This equally helped to save time, cost, stress and energy required in mobility of respondents

especially for those without personal means of mobility and old age. This was also corroborated by the works of Ref. [9], but there are exceptional cases whereby physical contact is highly needed especially when medical assistance and services are essential. Occasionally, visitation to places of worship cannot be ruled out despite their disability to exercise their belief and spiritual cleansing.

**Table 2** Socio-economic and Demographic Characteristics of Disabled Elderly. Source: authors

(a) Age of Respondents			(f) Educational Background		
Age	Frequency	%	Education	Frequency	%
60 -65	132	33	Primary	74	18.5
66 – 70	174	43.5	Secondary	72	18
71 – above	94	23.5	Tertiary	202	50.5
<b>Total</b>	<b>400</b>	<b>100</b>	No Formal Education	52	13
(b) Sex of Respondents			<b>Total</b>	<b>400</b>	<b>100</b>
Sex	Frequency	%	(g) Occupational Status		
			Status	Frequency	%
Male	278	69.5	Civil Servant	04	01
Female	122	32.5	Retired	362	90.5
<b>Total</b>	<b>400</b>	<b>100</b>	Business Tycoon	18	4.5
(c) Marital Status			Farming	08	02
Status	Frequency	%	Artisan	08	02
Married	312	78	<b>Total</b>	<b>400</b>	<b>100</b>
Widowed	53	13.3	(h) Types of Impairments		
Divorced	21	5.3	Impairment	Frequency	%
Separated	14	3.5	Visual	248	62
<b>Total</b>	<b>400</b>	<b>100</b>	Crippled	94	23.5
(d) Income			Deaf	30	7.5
Income	Frequency	%	Dumb	24	06
50000-100000	152	38	Deaf & Dumb	4	01
100001-150000	102	25.5	<b>Total</b>	<b>400</b>	<b>100</b>
150001-200000	90	22.5	(i) Telephone Ownership/Accessibility		
200001-250000	56	14	Response	Frequency	%
<b>Total</b>	<b>400</b>	<b>100</b>	Yes	301	75.3
(e) Vehicle Ownership/Accessibility			No	99	24.7
Response	Frequency	%	<b>Total</b>	<b>400</b>	<b>100</b>
Yes	354	88.5			
No	46	11.5			
<b>Total</b>	<b>400</b>	<b>100</b>			

### 3.2 Travel/Trip Behavioural Characteristics of the Disabled Elderly

It was observed in Table 3 which illustrates the trip behavioural pattern and characteristics of the respondents. It was observed that frequent mode of travel is through Tricycle (45.5%) because of its design, conveniences, flexibility and cost efficient, closely followed by those that engaged in walking to their destination (22.2%) and 15.8% for those that travelled in their personal car. It was observed that majority (68.5%) travelled between 1–8 trips per week from home to their destination and not surprising that most trips generated were majorly (81%) for medical attention because of their predicament and quest for healthy living and social engagement (13%).

Furthermore, most length of trip generated is less than 10 km (64.3%) which suggested and buttress intra-city (69.8%) trip pattern of origin and destination. There is great

accessibility to public transport (75.5%) and this is not surprising when the most widely means of transportation is Tricycle which provide door to door service to users which characterized the reduction in length of walk before boarding (Less than 1 km) by the respondents as shown in Table 3.

**Table 3** Travel Behavioural Characteristics of Disabled Elderly. Source: authors

(a) Mode of Travel			(e) Length of Trip		
Model	Frequency	Percentage	Response in KM	Frequency	Percentage
Personal Car/SUV	63	15.8	Less than 10km	257	64.3
Bus	06	1.5	11-20km	82	20.5
Taxi	08	02	21-30km	36	9.0
Motorcycle	52	13	Above 30km	25	6.3
Tricycle	182	45.5	<b>Total</b>	<b>400</b>	<b>100</b>
Walking	89	22.2	(f) Purpose of Trip		
Total	400	100	Purpose	Frequency	Percentage
(b) Frequency of Trips			Medical	324	81
Trip	Frequency	Percentage	Religion	18	02
1-8	274	68.5	Family	16	04
9-15	106	26.5	Social	52	13
16-above	20	5	<b>Total</b>	<b>400</b>	<b>100</b>
Total	400	100	(g) Trip Origin-Destination Pattern		
(c) Convenience of Modal Choice			Response	Frequency	Percentage
Response	Frequency	Percentage	Intra-city	279	69.8
Yes	351	87.8	Inter-city	82	20.5
No	49	12.2	Inter-state	39	9.8
Total	400	100	Total	400	100
(d) Length of Walk before Boarding			(h) Access to Public Transport		
Distance (km)	Frequency	Percentage	Response	Frequency	Percentage
Less than 1	262	65.5	Yes	302	75.5
1-3	72	18.0	No	98	24.5
4-6	36	9.0	<b>Total</b>	<b>400</b>	<b>100</b>
6 – above	30	7.5			
Total	400	100			

### 3.3 Mobility Constraints Faced by Disabled Elderly

Table 4 presented the perceived problems faced by disabled elderly in the selected cities. It was observed that poor road situation and condition in most of the urban centers within the study areas is obviously a major problem as majority (92%) of respondent affirmed this. This problem, as perceived by respondent, is attributed to lack of maintenance culture and obvious neglect by the authorities saddled with the responsibility of the provision and maintenance of road infrastructures. Meanwhile, the most of the existing roads in the selected cities especially in Sagamu, and Ijebu-Ode are with no signage, road signals, lightings and even lack road furniture and other related facilities needed to facilitate ease of mobility for all and by extension, the elderly with impairments. Also, it was observed by the respondents that the vehicles used for public transport does not, in any way, have the required facilities to take care of the special needs of the disabled elderly. Hence, majority (68%) of respondents

lamented that the poor design of vehicles used makes trips difficult for them, particularly during the rush hours or peak periods.

Furthermore, majority of the respondents reiterated that the conditions of public transport vehicles are too poor, old, rickety in nature and with inadequate sanitary facilities (76%) and they are equally faced with poor accessibility to the public transport infrastructural facilities and services (84%). It was observed from the field survey that the fleet available commuting is inadequate in supply, and even the available ones are not well taken care of thereby imposing danger on the passengers, especially the elderly with disability. More so, it was observed by majority of the respondents (70%) that the elderly with impairments stay longer than necessary at bus terminals due to uncoordinated transport system which is mostly characterized with crime during peak hours. More so, the few available commercial buses in operation within the cities charge exorbitant fare (58%) and commuters are mostly extorted by the transport operators. In other words, reckless driving is at lower magnitude according to the respondents (58%), this might be unconnected with the government and community policing virtually on most of the road corridors within the cities and complemented by the continuous awareness and campaign rigor of the authorities concerned in the sensitization of the public on the dangers inherent in reckless driving on the general human and community health condition.

Nevertheless, the sampled respondents reiterated that assistive devices and technology should be incorporated in vehicle design and the use of specially-designed vehicles such as low bed vehicles and other related special facilities such as ramp and audible sound signals at bus terminals that can aid their mobile accessibility should be encouraged and introduced in Nigerian cities towards ameliorating the problems faced. Likewise, the provision of aided road furniture should be provided at designated points to assist the elderly with disability in boarding and alighting from vehicles such as audible signal, colour visibilities, traffic signs and signals.

**Table 4** Mobility Constraints faced by Disabled Elderly. Source: authors

		No		Yes		Total	
Challenges		Freq.	%	Freq.	%	Freq.	%
1	Poor road situation and condition	32	8.0	368	92.0	400	100
2	Poor vehicular design for disabled use	272	68.0	128	32.0	400	100
3	Poor public transport accessibility	64	16.0	336	84.0	400	100
4	Poor public transport vehicular condition	96	24.0	304	76.0	400	100
5	Poor or lack of road furniture for disabled use	152	38.0	248	62.0	400	100
6	High fare charges	168	42.0	232	58.0	400	100
7	Reckless driving by commercial drivers	232	58.0	168	42.0	400	100
8	Longer waiting time at bus stops	120	30.0	280	70.0	400	100



### 3.4 Hypotheses Testing

*H<sub>0</sub>- Socio-economic status (vehicle ownership) does not influence travel behaviour of disabled elderly in selected cities*

Further investigations were conducted using the application of binary logistic regression model to determine relationship between the respondents' socio-economic status (vehicle ownership) and their travel behaviour in the study area. Thus, the dependent variable (the variable to be predicted) is dichotomously coded as yes (1) or no (0), while the independent variables (predictors) of origin and destination of trips, preferred period of travel, purpose of trip, mode of travel, frequency of trips, length of trips, access to public transport, convenience of modal choice, and length of walk before boarding were coded on both dichotomous and continuous basis. However, the binary logistic regression analysis was used to examine the relationship between dependent and independent variables as it establishes the extent of relationship between a binary outcome variable and a group of predictor variables (Table 5).

Result from Table 5 shows that 347 cases are observed to be 1 and are correctly predicted to be 1, seven (7) cases are observed to be one (1) but predicted to be zero (0), while cases that are not correctly predicted are also shown in the Table. The overall percentage of cases that are correctly predicted by the model is 96%, indicating that the model was able to classify 96% of all cases correctly. Interestingly, the model through the Chi-square result shown in Table 5 was used to test the overall significance of predictors (dependent variables) in the binary logistic regression model as used. The results show a Chi-square value of 175.681 and probability of  $p < 0.000$ . Therefore, the dependent variable is statistically significantly predicted by the independent variables (predictors). Hence, the socio-economic status (vehicle ownership) statistically influences the travel behaviour of respondents in the study area. More so, in order to understand the extent of variable, the dependent variable can be explained by the model (the equivalent of  $R^2$  in multiple regression) will reveal the result of Cox & Snell  $R^2$  and Nagelkerke R Square value. Both methods are sometimes referred to as Pseudo R square values and are methods of calculating the explained variable in the model. Hence, from Table 5, the explained variation in the dependent variable based on this study model ranges from 35.5% to 69.7% respectively, indicating strong relationship between predictor and prediction.

Furthermore, the variable in equation Table 5 shows the contribution of each independent variable to the model and its statistical significance through the Wald Test (Wald column) and statistical significance of the test in the Sig. column (Table 5). From the result, trip purpose ( $p=0.019$ ), mode of travel ( $p=0.032$ ), and convenience of modal choice ( $p=0.000$ ) added significantly to the model prediction, while preferred period of travel

( $p=0.326$ ), trip origin-destination, ( $p=0.816$ ), access to public transport ( $p=0.994$ ), frequency of trips ( $p=0.798$ ), length of trip ( $p=0.935$ ), and length of walk before boarding ( $p=0.199$ ) did not significantly add to the model. Hence, only three (3) out of nine (9) predictors best predict the model. The findings depict that a unit change or improvement in the socio-economic status of respondents will definitely bring improvement in travel behaviour of disabled elderly.

**Table 5** Binary Logistics Regression Analysis Classification Table. Source: authors

	Observed		Predicted		
			Vehicle Ownership		Percentage Correct
			No	Yes	
Step 1	Vehicle Ownership	No	37	9	80.4
		Yes	7	347	98.0
	Overall Percentage				96.0
a. The cut value is .500					

omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step 1	Step	175.681	9	.000
	Block	175.681	9	.000
	Model	175.681	9	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	109.793 <sup>a</sup>	.355	.697

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Preferred period of travel	-1.212	1.234	.964	1	.326	.298
	Trip origin-destination	-.293	1.257	.054	1	.816	.746
	Trip purpose	1.834	.779	5.548	1	.019	6.258
	Mode of travel	1.470	.976	2.270	1	.032	4.348
	Access to public transport	.006	.870	.000	1	.994	1.006
	Frequency of trips	.319	1.244	.066	1	.798	1.375
	Length of trip	-.036	.443	.007	1	.935	.965
	Length of walk before boarding	.463	.360	1.651	1	.199	1.588
	Convenience of modal choice	4.329	.778	30.995	1	.000	75.880
	Constant	-2.725	1.461	3.479	1	.062	.066

a. Variable(s) entered on step preferred period of travel, trip origin-destination, trip purpose, mode of travel, access to public transport, frequency of trips, length of trip, length of walk before boarding, convenience of modal choice.

By implication, the more the improvement in the socio-economic status which perhaps cuts across improved monthly income or incentives and vehicle ownership, the more improve the quality of trip generated and trip behaviour of the disabled elderly within the emerging Nigerian cities. This is no doubt true as most of the sampled respondents mostly travel for medical and recreational purposes and only few indicated others reasons as the purpose of making trip and their overall travel behaviour.

#### **4. Conclusion and Recommendations**

It was observed from the study that the disabled elderly mobility needs are being marginalized and less cared population in Nigeria as compared with other age group which otherwise very important for their well-being to access basic needs of life. It was noted that there is decrease in mobility of the disabled elderly thereby leading to social exclusion and depression due to non-availability of access facilities such as provision of ramp, guide rail, audible signal, wheel chair etc. It was also reflected from the study that the government has no concern or show less priority about the provision of road infrastructure, policies and facilities accessibility to disabled elderly. Lack of coordination and activities of public transport provider by regulatory bodies encourages indiscriminate transport fares that debar the impaired elderly the ability to integrate well in the society and healthy well-being.

Furthermore, it was clearly observed from the study that there is less coordination and poor integration between urban land uses and transport planning within urban centers as activities of elderly with disabilities within their neighbourhood is poorly linked and inaccessible by available urban transport means. It is however, based on the backdrops, vis-à-vis, the study findings on the research objectives and the need to sustain the mobility of the disabled elderly in emerging Nigerian cities, that the study recommends the following: that the daily mobility of the impaired elderly should be supported with subsidized services and financial aids by the government and other transport service provider in the cities. More so, since disabilities in most developing nations is associated with poverty. In addendum, urban transport infrastructural facilities should be well-organized, coordinated and integrated with different transport modes to promote greater intermodal mobility accessibility and safety for not only the impaired elderly, but for all.

More so, the integrated urban transportation system which facilitates and allows mobility of all, most especially, the vulnerable groups including the elderly with disability to move freely, safely and independently should be embraced and prioritized by the Government as well as accompanied with installation of aided features or facilities at every location they visit towards achieving the full benefits of accessibility for all as well as enhancing the involvement of disabled elderly in economic and social processes in the society. Meanwhile, the design of disabled elderly friendly cities aimed at improving the wellbeing and ability to use different types of urban utilities facilities particularly transport to influence ease of mobility in urban context for social inclusion should be made priorities by the government and the planners within the cities. In other words, vehicle design constitutes a major obstacle and constraint to free movement of the impaired elderly. Therefore, specialized vehicles with “Low Bed”, guide rails and audio facilities should be used to convey information to the

physically challenged and visually impaired elderly for convenience should be encouraged and introduced in Nigerian cities. However, the numerous mobility needs of disabled elderly can be achieved through realistic understanding of their needs using policies and strategies as synergy between the government, public and stakeholders in transport sectors in the provision of integrated services and basic road amenities to cater for the needs of elderly with disability. Hence, policies with standard and sustainable planning concepts e.g. the planning with the people and bottom-up concepts are needed and should be encouraged and adopted.

## References

- [1] United Nations. (2015). Ageing and Disability. Functional disability among elderly Nigerians: results from the Ibadan Study of Ageing. New York, NY: Department of Economics and Social Affairs, UN.
- [2] World Health Organisation. (2007). The Burden of Dementia. *America Journal of Managed Care*, 13, 193–197.
- [3] Frye, A. (2013). Disabled and Older Person and Sustainable Urban Mobility. Thematic Report for Global Human Settlement. Nairobi.
- [4] Odufuwa, B.O. (2007). Towards Sustainable Public Transport for Disabled People in Nigerian Cities. *IATSS Research* 30(1), 60-66.
- [5] Olawole, M.O. (2015). Analysis of Intra-Urban Mobility of the Elderly in a Medium-Size City in Southwestern Nigeria. *Mediterranean Journal of Social Sciences*, 6, 90-104.
- [6] Saunders, I.E., Green, J.M., Petticrew, M.P., Steinbach, R., & Roberts, H. (2013). What are the health benefits of active travel? Systematic Review of Trials and Cohort Studies.
- [7] Webber, S.C., Porter, M.M. & Menec, V.H. (2010). Mobility in Older Adults: A Comprehensive Framework. *The Gerontologist* 50(4), 443-450.
- [8] Hu, X., Wang, J., & Wang, L. (2013). Understanding the travel behavior of elderly people in the developing country: a case study of Changchun, China. 13th COTA International Conference of Transport Professionals. *Procedia – Social and Behavioural Sciences*, 96, 873–880.
- [9] Oyesiku, K.O. (2016). Analysis of Mobility Pattern and Challenges of Transportation Needs of the Elderly in Fast Growing City in Nigeria. *Advances in Social Sciences Research Journal* 3(3), 141-154.